AL-BASR

MEDICAL RECORD SYSTEM (MRS)

USER MANUAL

Version 1.0
March 27, 2015

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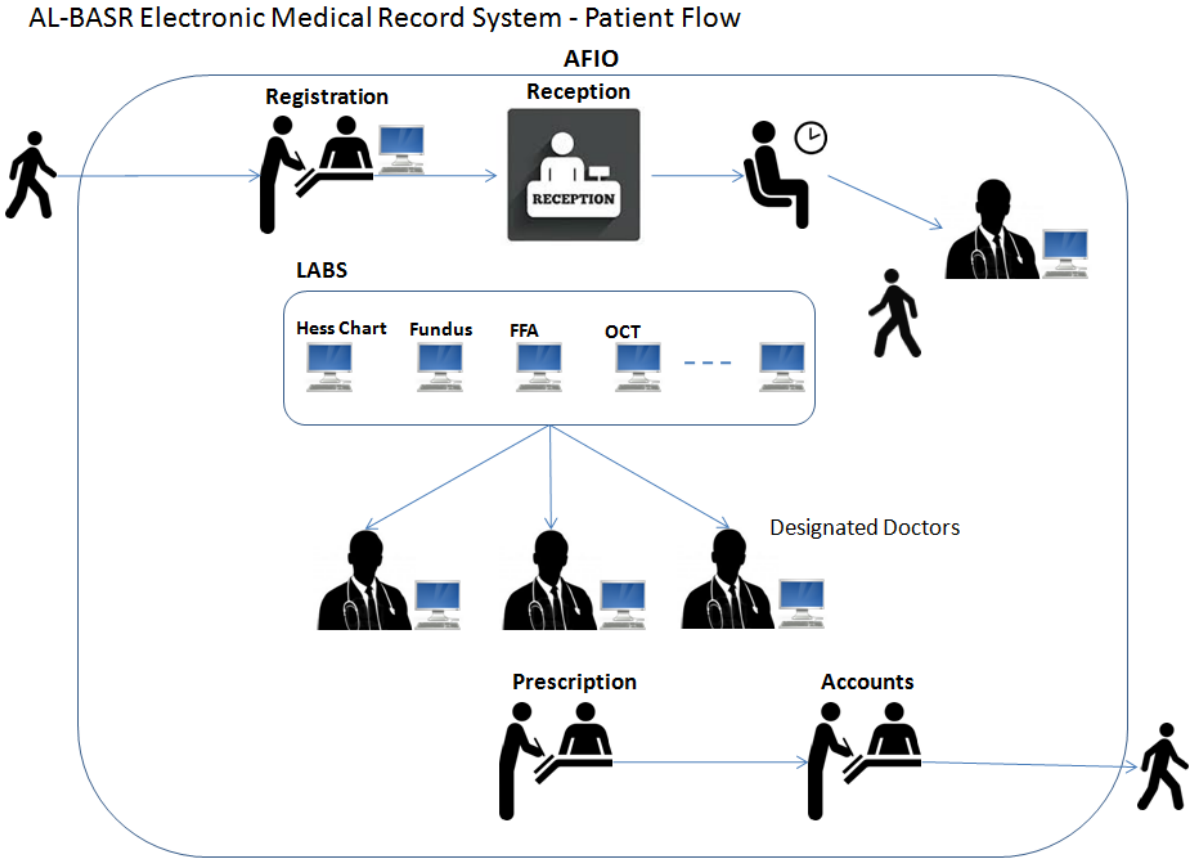
Preface

Intended use

AL-BASR is designed to represent data that accurately captures the state of patient at all times. It is an Electronic Patient Health Record System. Allows an entire patient history to be viewed; without the need to track down the patient's previous medical record. Assists in ensuring that data is accurate, appropriate and legible. By maintaining one modifiable file, that is updated constantly, it reduces data replication.

Supported data includes images and refraction data, multimedia. AL-BASR MRS also allows the user to do measurements and enhancements on ophthalmology images.

The figure below summarizes the complete scope of AL-BASR MRS. From patient's registration till its departure AL-BASR keeps track of all the activity that is associated with a patient's visit.



Displays for safe use

To encourage safe and proper use and to prevent loss of data, important messages are inserted in the User Manual.

Presentation of notes and cautions in this manual are done confirm the following table:

Icon		Meaning
✓	**NOTE**	This symbol indicates that the message has special interest or importance to the reader. Failure to read the note will not result in physical harm to the reader, equipment or data.
⚠	**CAUTION**	This symbol indicates that if this information is ignored, data loss or material damage may occur.

Safety Cautions

⚠	**CAUTION**	Database folder **'AL_BASR _DATA'** contained in allocated Hard Drive Partition, must not be deleted manually, this will result in permanent data loss.

⚠	**CAUTION**	Please read the user manual carefully before using AL-BASR MRS Software.
✓	**NOTE**	We strive for a manual with screenshots of the first version of AL-BASR MRS.
✓	**NOTE**	This user manual is written on the assumption that the user already has knowledge of the personal computer (PC) and Microsoft Windows operating systems. This user manual does not describe the use of a PC or Microsoft Windows.
✓	**NOTE**	Should you have unexpected problems, please contact to AL-BASR Support and Services team.

	CAUTION	Do not use AL-BASR when there is visible damage to cables connecting the PC to the instrument or visible damage to any other part of your set up. In such event please contact to AL-BASR representative.
	CAUTION	Make sure that you always have an up to date virus scanner and firewall installed on your system.
	CAUTION	Avoid disconnecting cables from the PC when the AL-BASR MRS software is running.
	CAUTION	Avoid resetting or turning off the PC when the AL-BASR MRS software is running.
	CAUTION	Avoid resetting or turning off the instrument when the AL-BASR MRS software is running.

User maintenance

Unexpected events

In case of an unexpected event, such as a power failure, PC crash or MRS crash, AL-BASR MRS is shut down without saving data.

Local Storage location

Database storage location C:\AL_BASR_DATA is created by default on software installation. Though in case of disk space in-availability or user preference its location can be updated by choosing another ‘Drive’ from Database Settings options in Options menu tab.

System Requirements:

Hardware Requirements

	Minimum	Recommended
RAM	2 GB	4 GB
CPU	Modern multicore architecture	Modern multicore architecture
hard disk space	40 GB	100 GB and above
Screen resolution	1024x768 pixels	1280x800 pixels or more

Note: Depending on the user role and data volume to be handled, the hardware requirements may exceed the minimum requirements.

Software Requirements

Across Windows Clients Supported Operating Systems
MS Windows XP
MS Windows 7 SP1
MS Windows 8
MS Windows 8.1

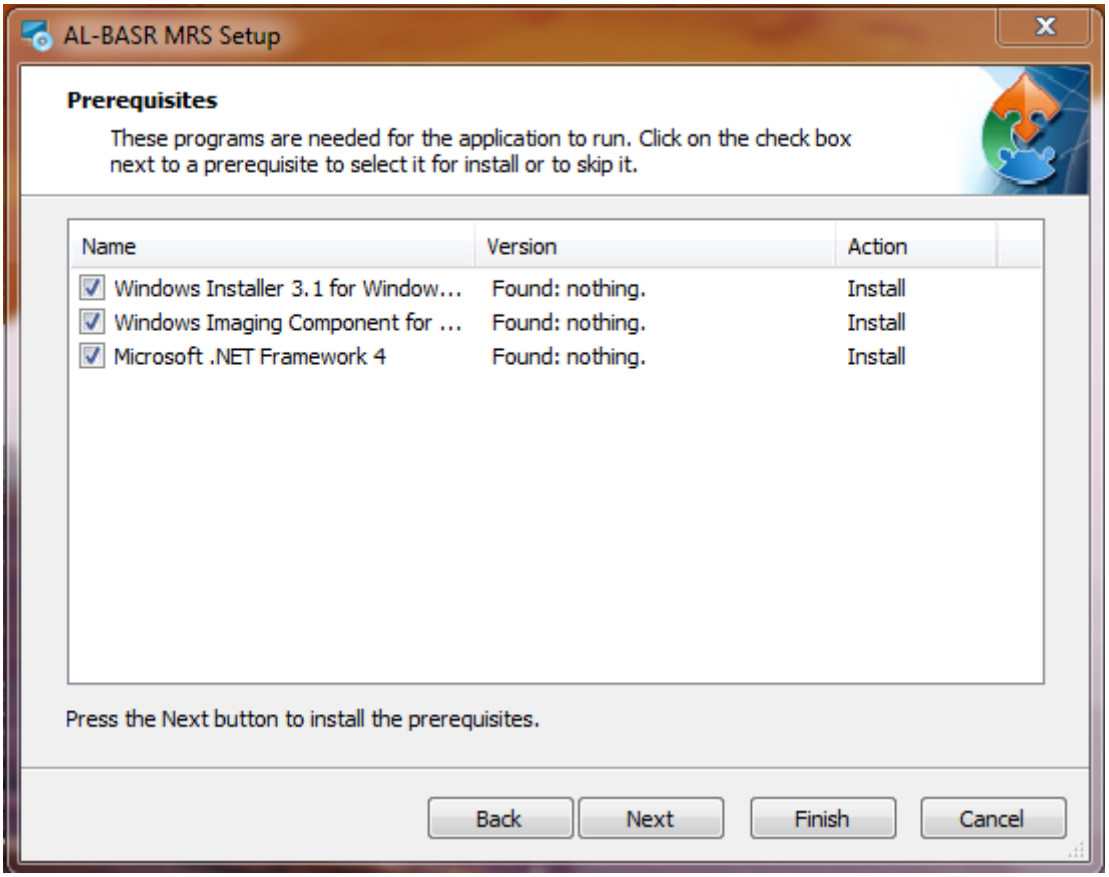
Additional Components (If Not Already Included in OS)

MS .NET Framework 4 (included in the installation packages)
Adobe Reader 11

Installation Guide

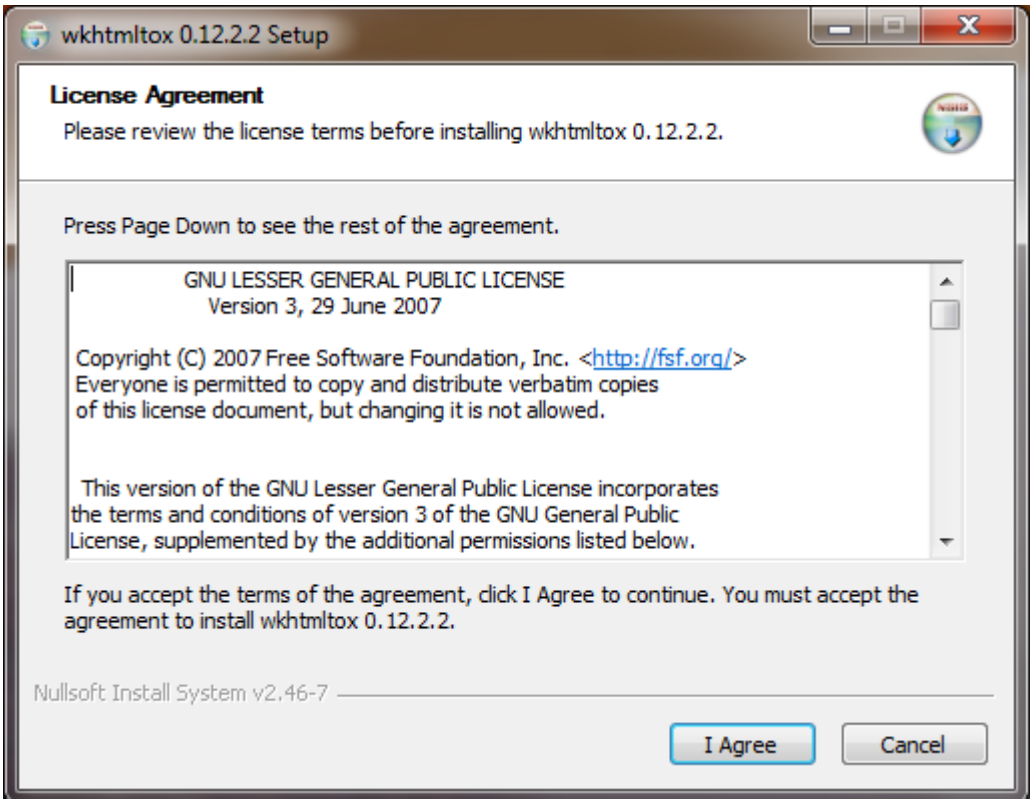
Insert the CD and run application AL-BASR MRS Setup.exe, default selected prerequisites will be installed first. After successful prerequisites installation, AL-BASR installation starts up.

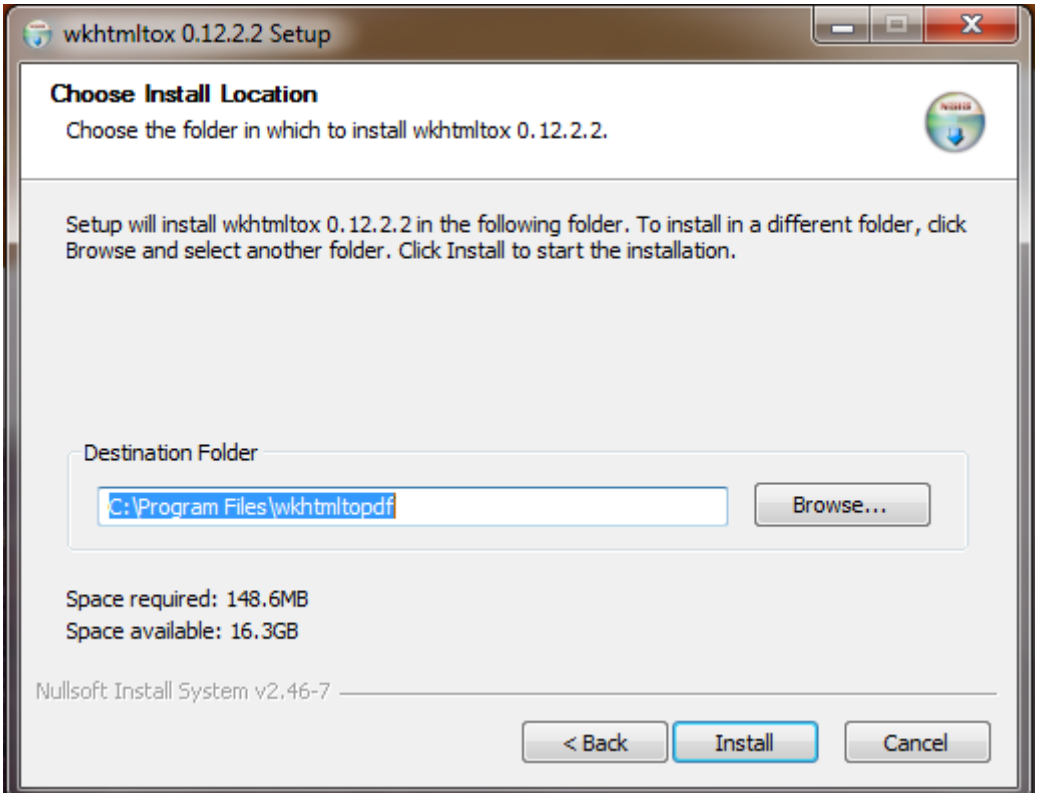
Pre-requisite Installation



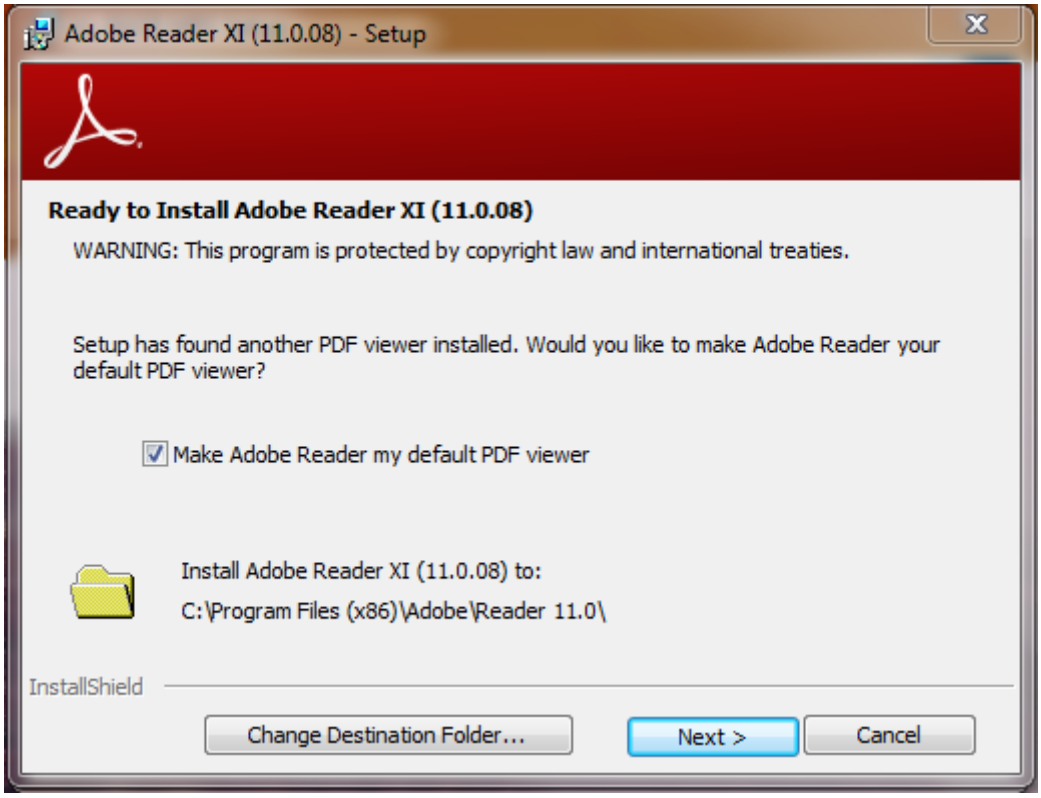
Additional pre-requisite softwares are included in the installation package, which include **Adobe Reader XI and wkhtmltox**, these install automatically after prompting for user aproval, please ensure to allow their installation as they are critcal for a successful installation and running of the software.

Wkhtmltox Installation:



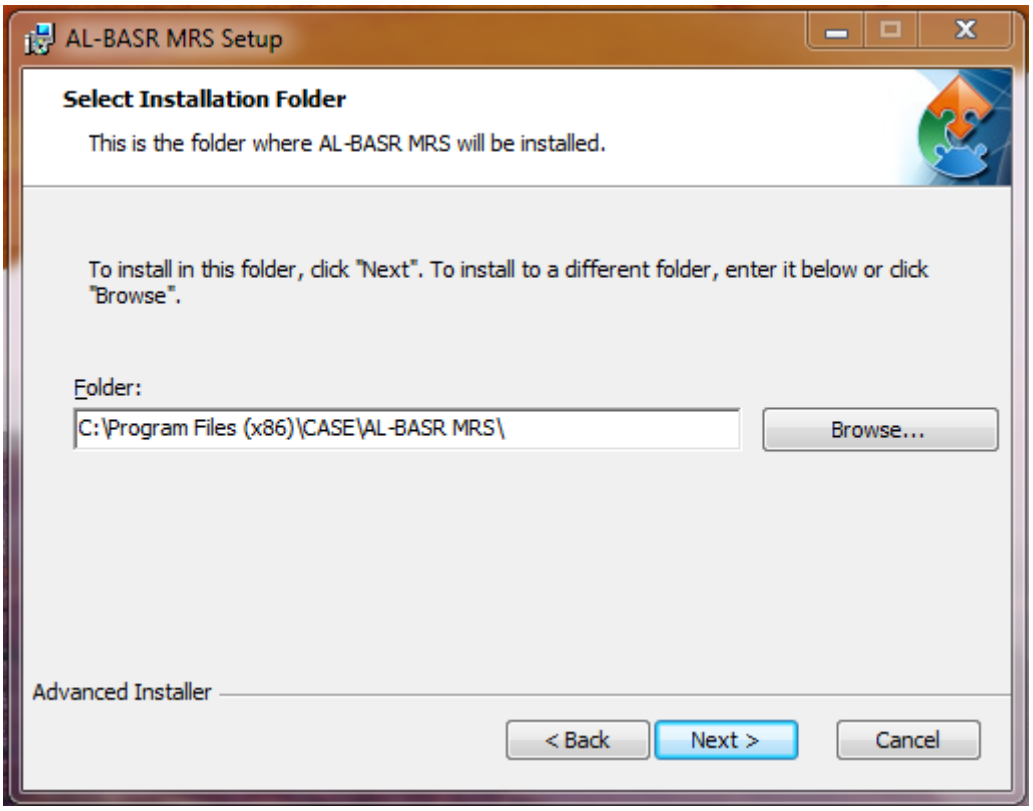


Adobe Reader XI Installation:



Installing AL-BASR

In the below window, select the installation directory or choose the default, to install AL-BASR MRS



User Authentication: Login

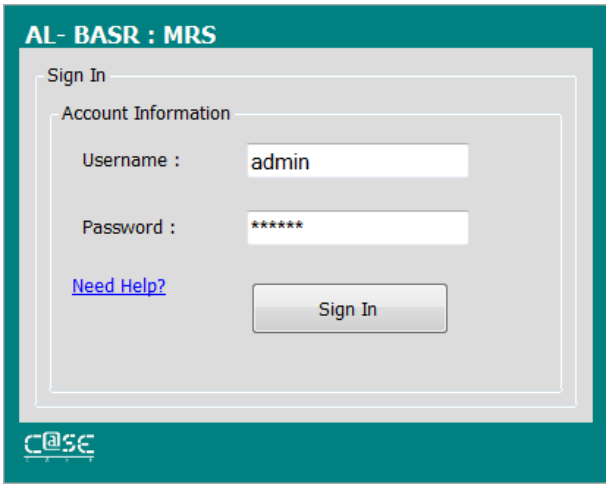
AL-BASR asks for user authentication, before allowing access. The default user is added into the system with administrative rights of access.

Its credentials are:

Username: admin

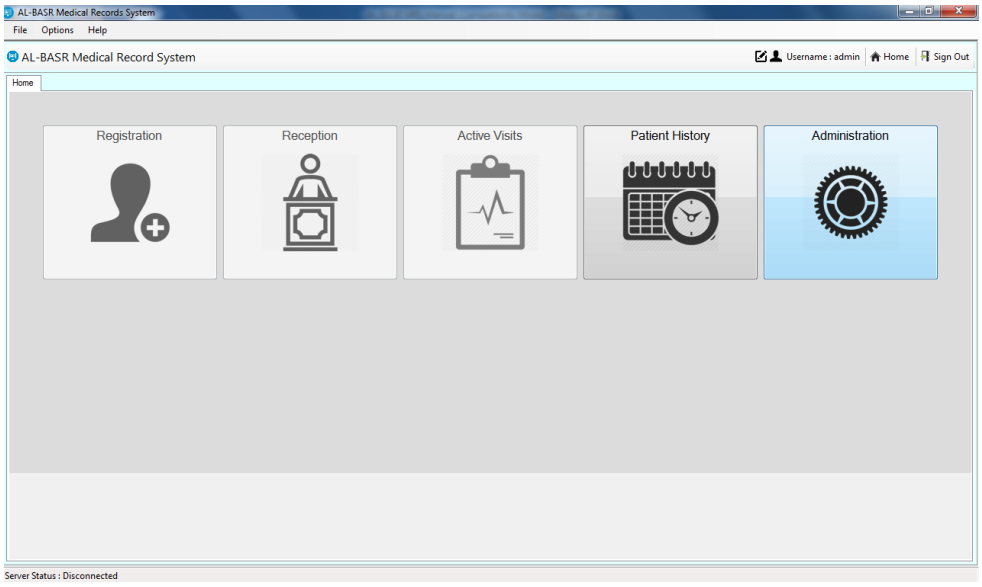
Password: admin1

Use them to log in to the system for the first time.



Administration Account View

The administration account, gives right for system administration(like managing user accounts i.e. creating new user accounts, updating/editing existing accounts, deleting accounts) and to generate statistical reports based on the system usage.



User Account Management

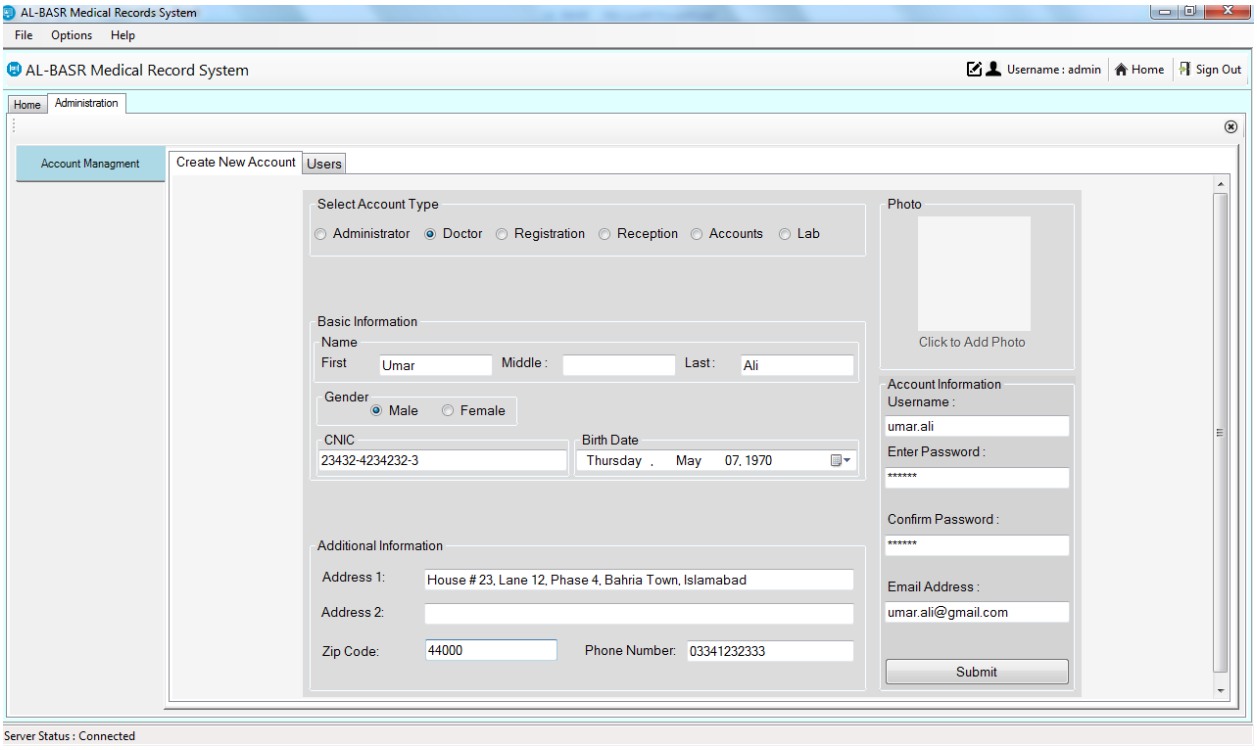
New Account Creation

Administrator has a privilege to add new users into AL-BASR. Clicking on **'Administration'** Button on the Main Menu opens up administration window with **New Account Creation** Form displayed in the Account Management tab by default.

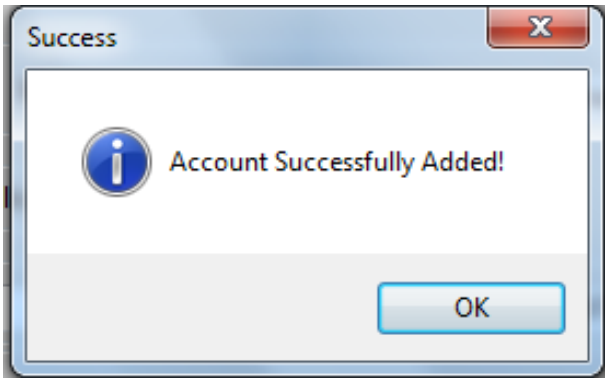
Account Type must be selected to specify access of AL-BASR to the users. Account Types are: Administrator, Doctor, Registration, Reception and Lab.

AL-BASR allows access of its usage specific to the responsibility of a user.

After filling in the necessary Fields: First Name, Username, Password, and Email a new account can be created by clicking on the **'Submit'** button.



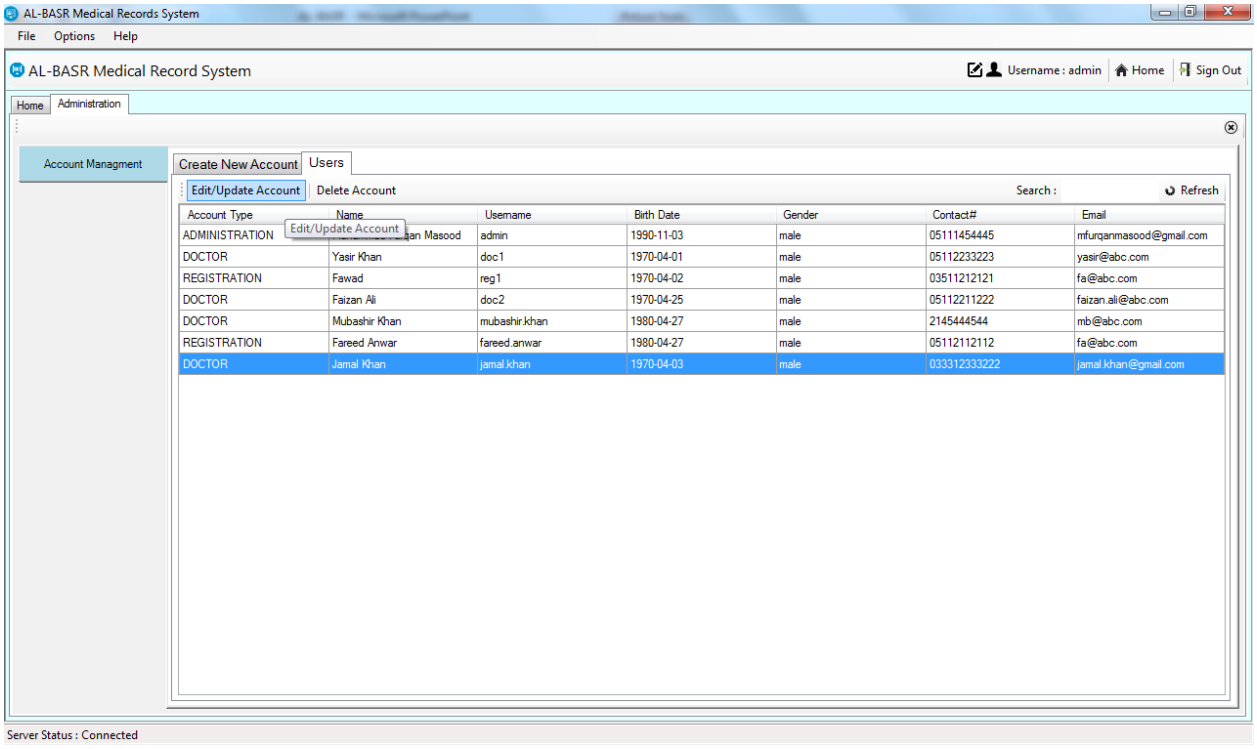
Upon successful Account Creation a Success Message is displayed:



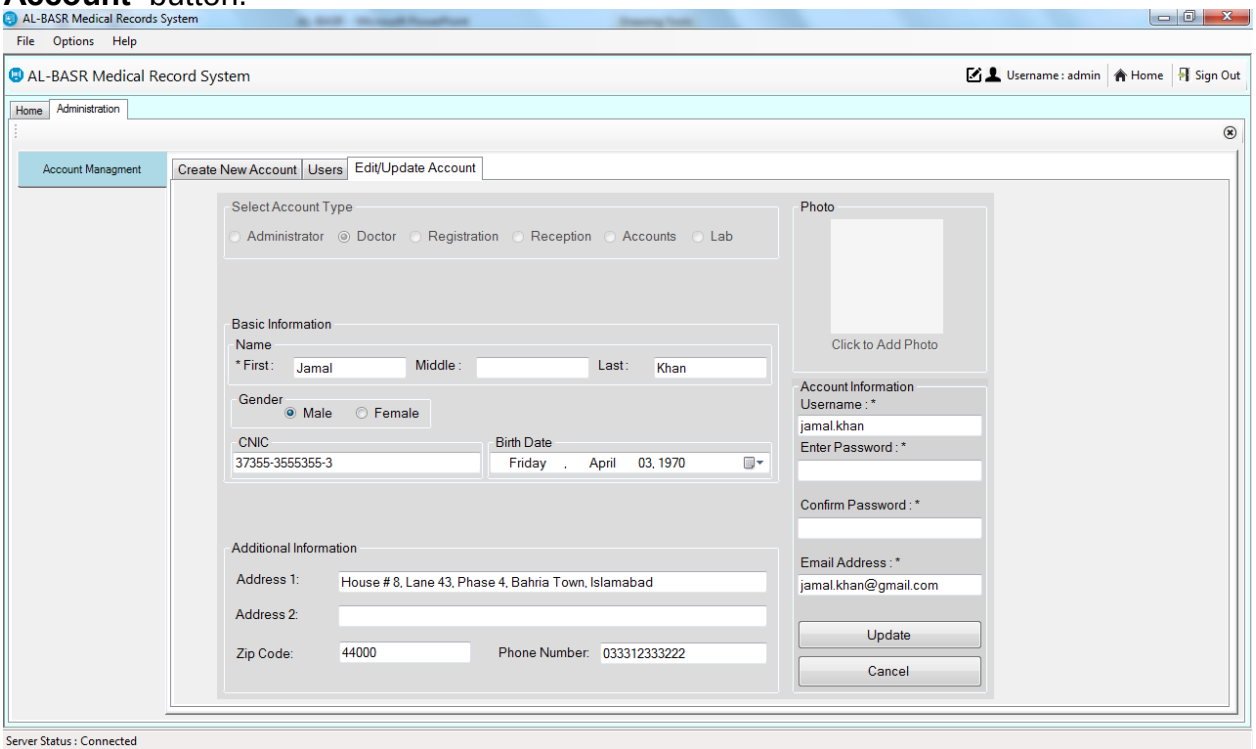
Managing Existing Accounts

Clicking on the Users tab at the Account Management Window a list of all users of AL-BASR is displayed.

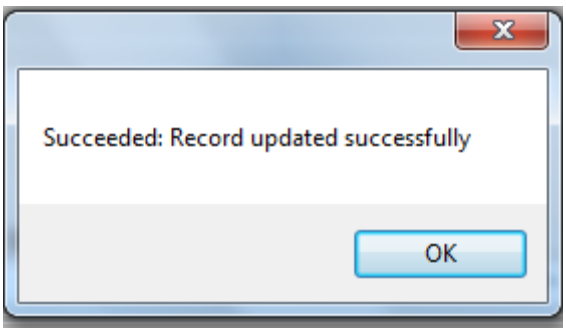
An administrator can **search** and view all users of AL-BASR. **View, edit/update** and **delete** their accounts, using the **toolbar options** right above the user list.



1. **Edit/Update Existing Account.**
   An existing account's information can be edited by clicking on the **'Edit/Update Account'** button.

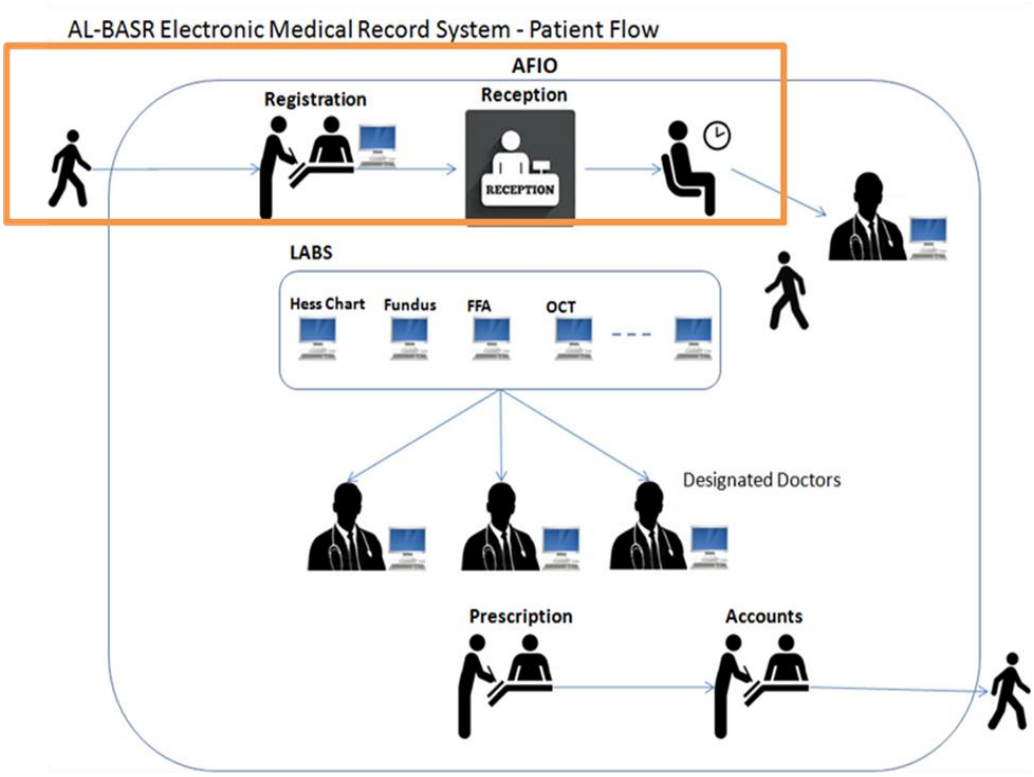


After updating required fields, clicking on the **'Update'** button updates the account information and a success message is displayed.

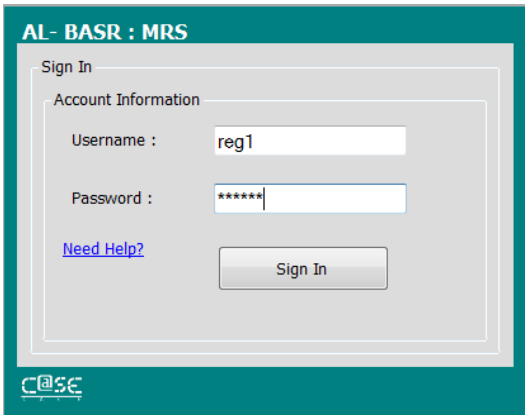


Patient Registration

Patient registration is performed at the registration terminal. By a registration personal whose account is registered with AL-BASR, of type: Registration.

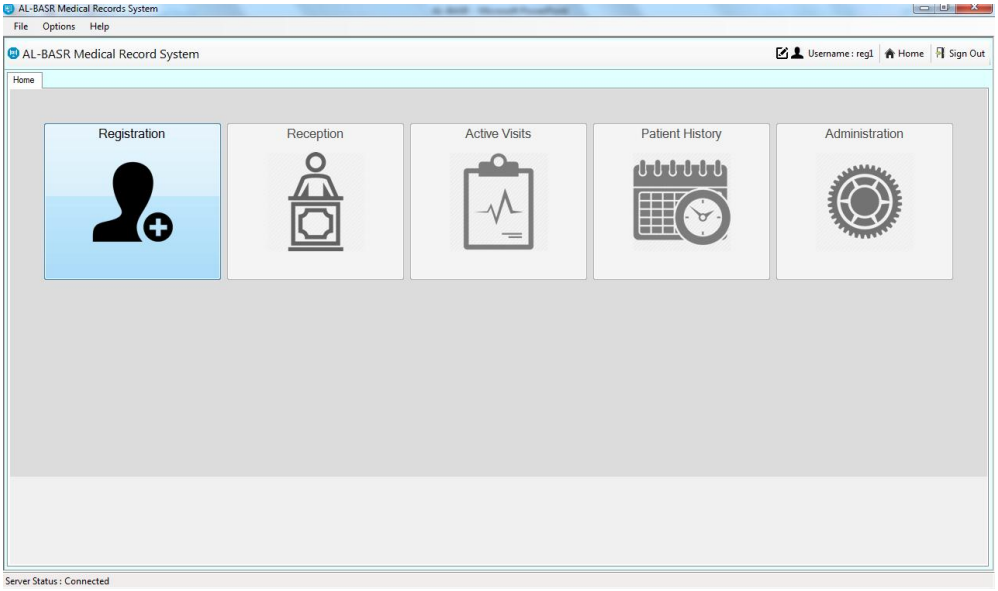


Signing in to AL-BASR as a "Registration" personal.



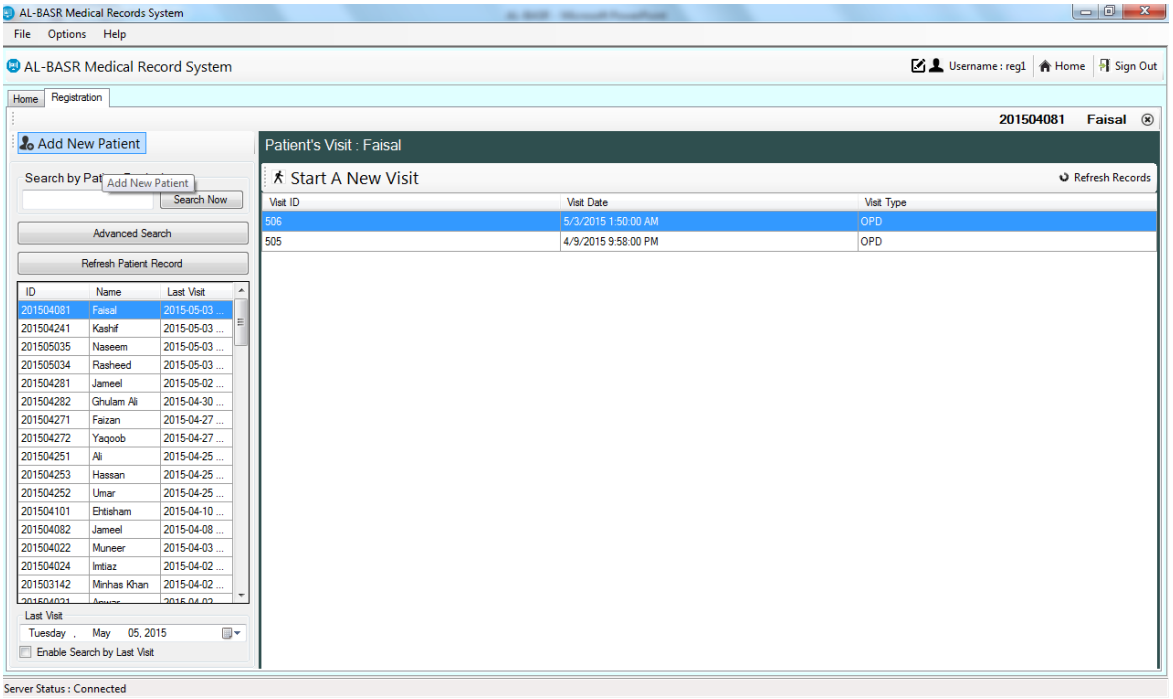
Registration Account View

For a registration personal, only registration option is enabled.
Clicking on the “Registration” button opens up the **Registration Window**.



Registration Window.

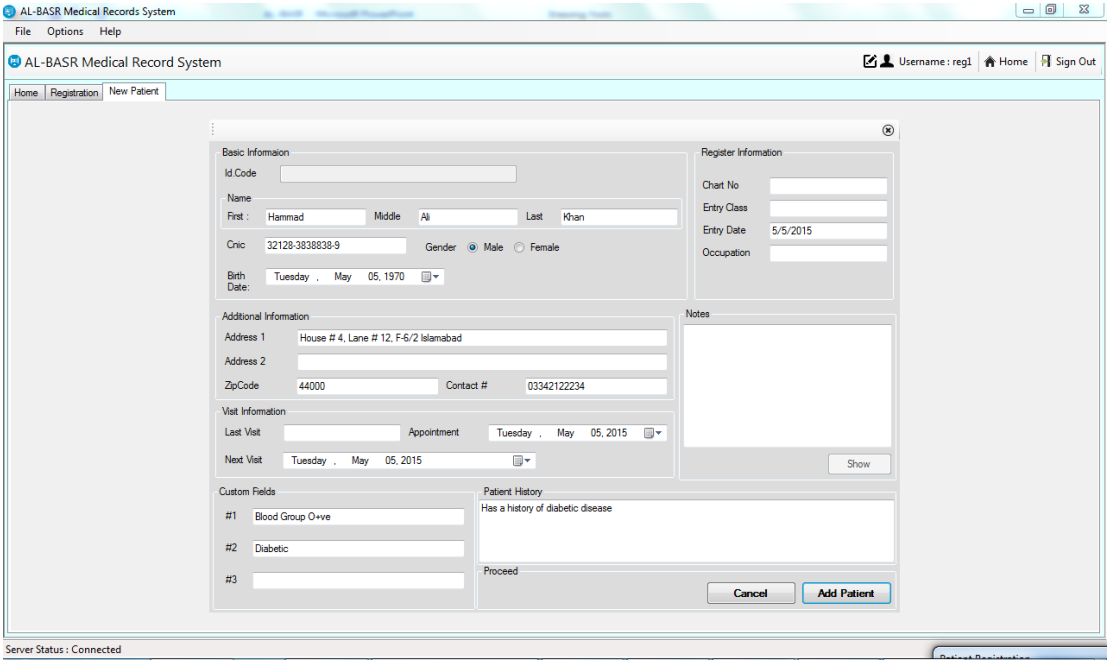
Registration view provides functionality to register new patients, search old patients, and create their visits for the day. Visit particulars like visit type (OPD, Emergency) and Department (Ophthalmology, Cardiology etc.) are provided at the visit creation time.



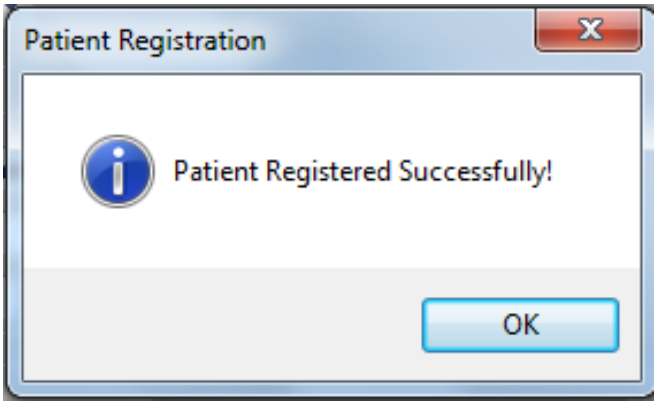
New Patients are registered from the registration window. **Add New Patient** button opens up a new registration form.

Patient details (at least first name)must provided to register a new patient into the

system. A unique ID.Code is allotted to the patient at this time, using which a patient can be identified easily.



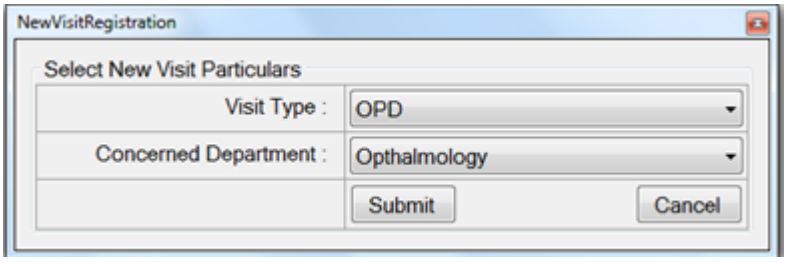
A success message is displayed upon successful registration of the patient.



Creating A New Visit

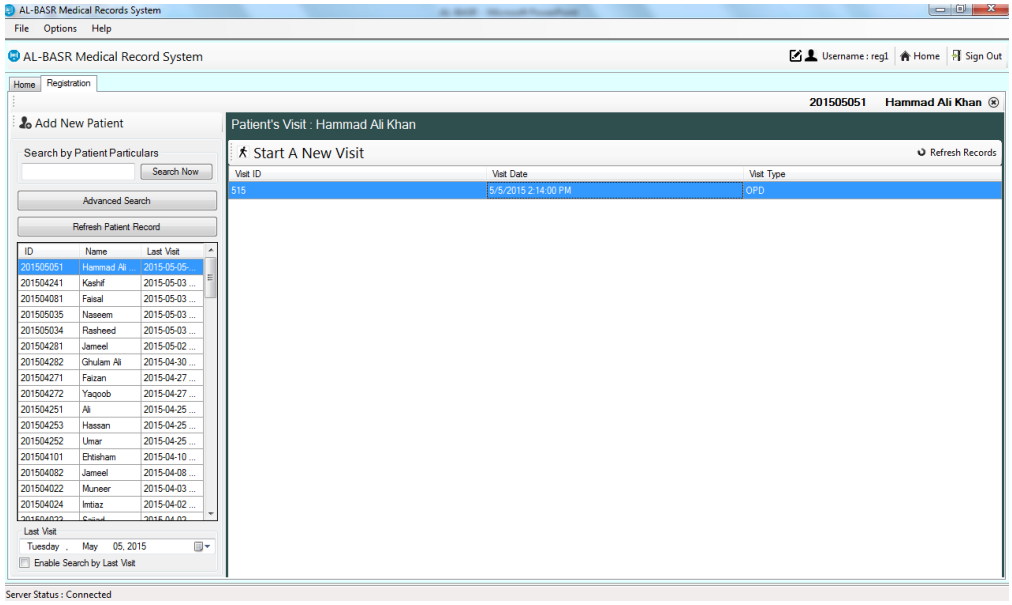
After patient's registration its new visit has to be created. Clicking on **'Start A New Visit'** button, a new visit for the day can be created.

Visit Particulars:
1. **Visit Type** (OPD, Emergency)
2. **Concerned Department**, must be selected before a visit is generated.



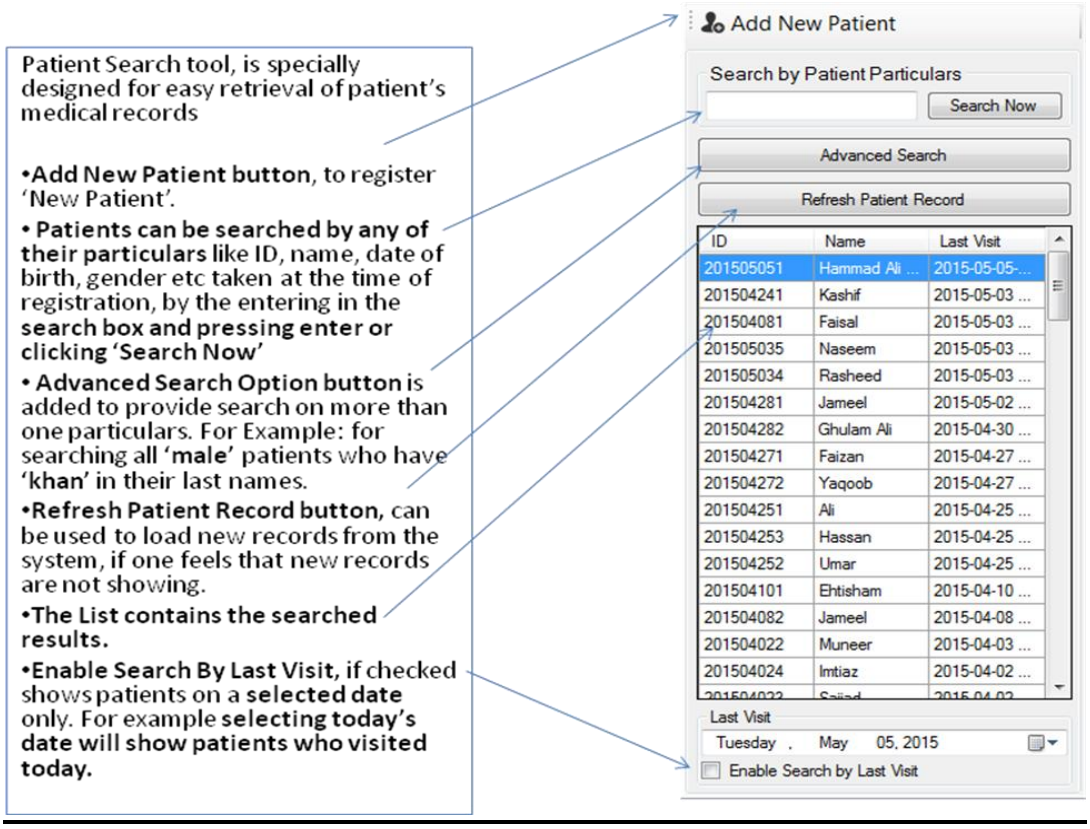
Type: **OPD** and Department: **Ophthalmology** is selected by default.

The created visit is **now associated** with the patient and displayed in a list of visits a patient had**, it behaves like a folder** and all **activities** like **test results and doctor's prescriptions can be attached to it**, as the patient get diagnosed.

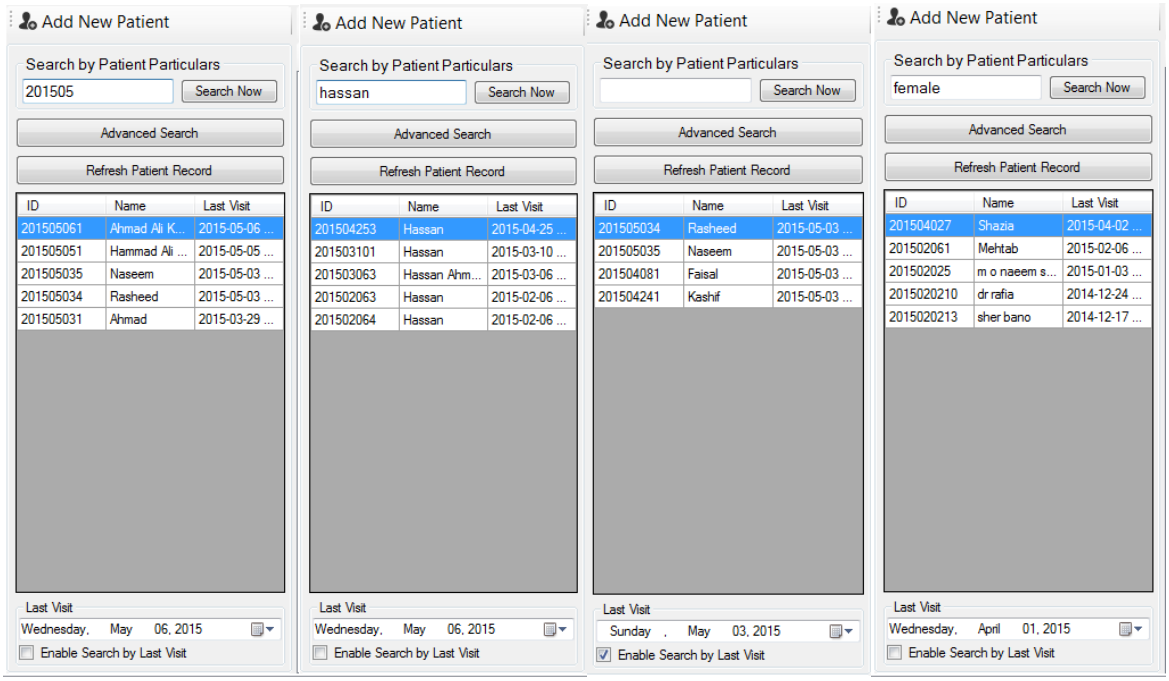


Patient Search

Patient Search Tool

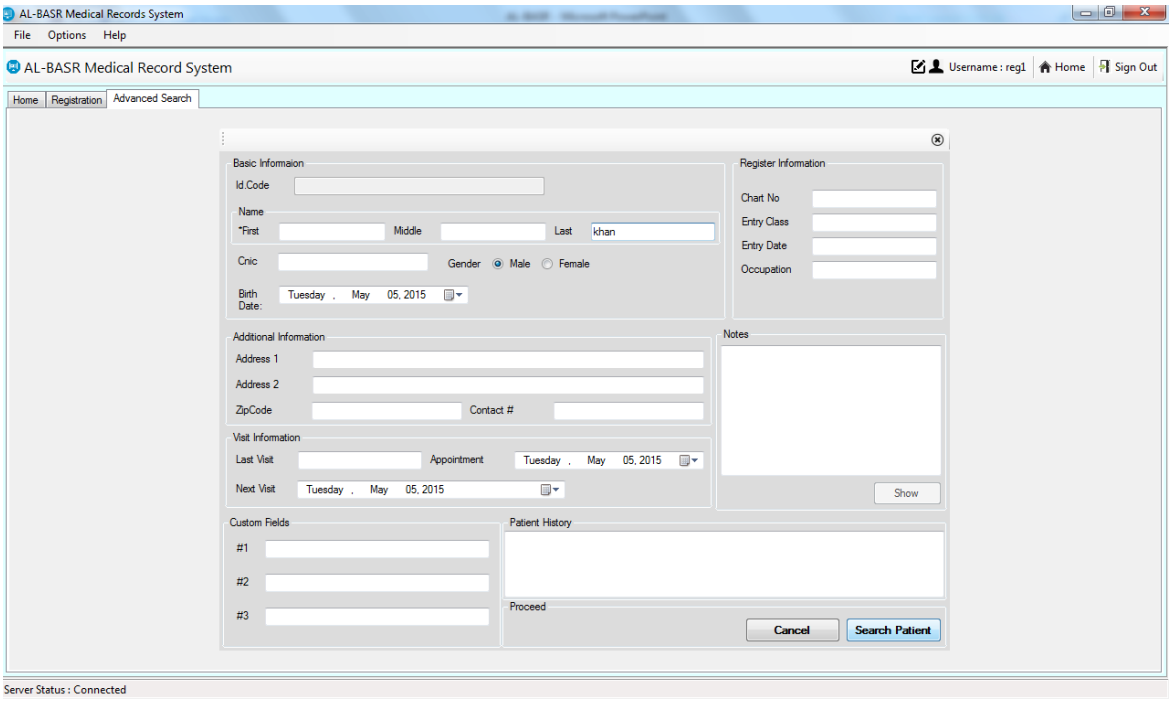


Some Search Results:

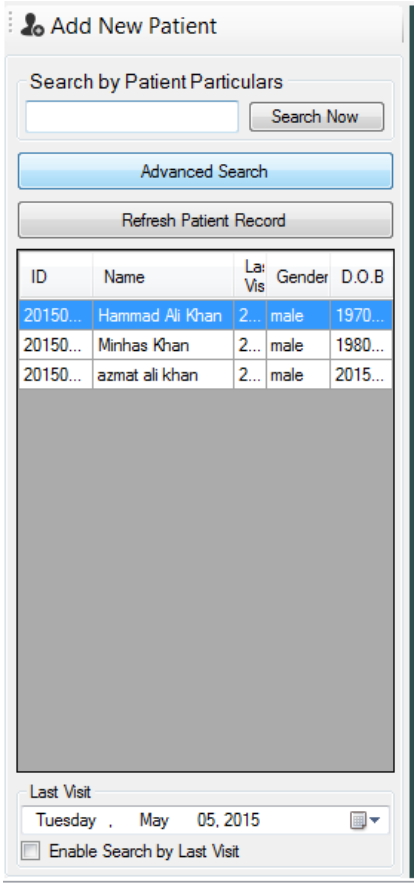


Advanced Search:

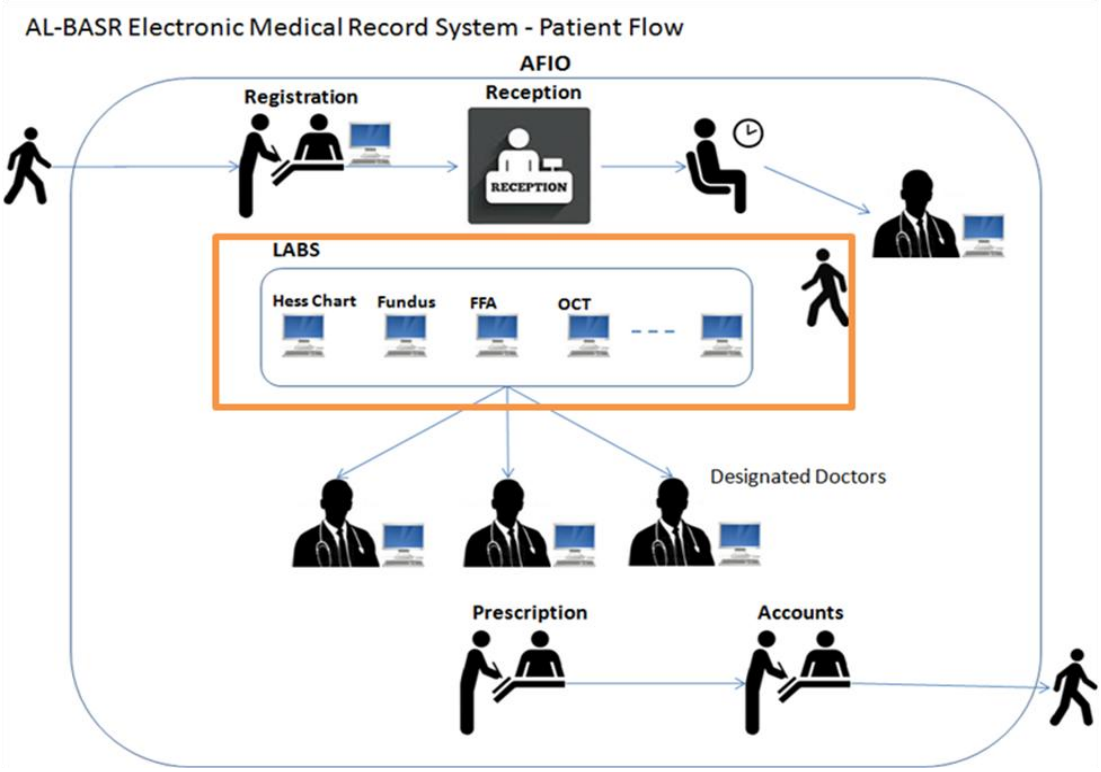
On the patient search tool **Advanced Search** button opens up the advanced search form, where a custom search criterion can be defined by a user.
For example: Searching all **'male'** patients with **'khan'** in their last names, like in the figures below.



Search Result:

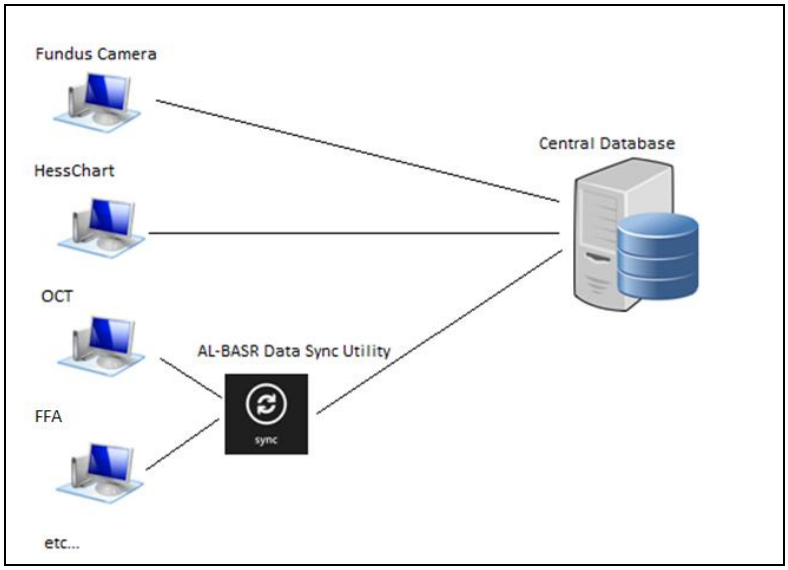


Medical Record Keeping (Laboratory Diagnosis Data Keeping)



Diagnostic software like **Fundus Imaging & Diagnostic System** installed with Fundus Cameras, and **Hesschart Diagnostic System** automatically attaches investigation results with the patient's visit in an integrated fashion.

For the rest of the Laboratory Investigations, utility software with the name of **AL-BASR Data Sync Utility** is used to attach the investigation results with the patient's visit.

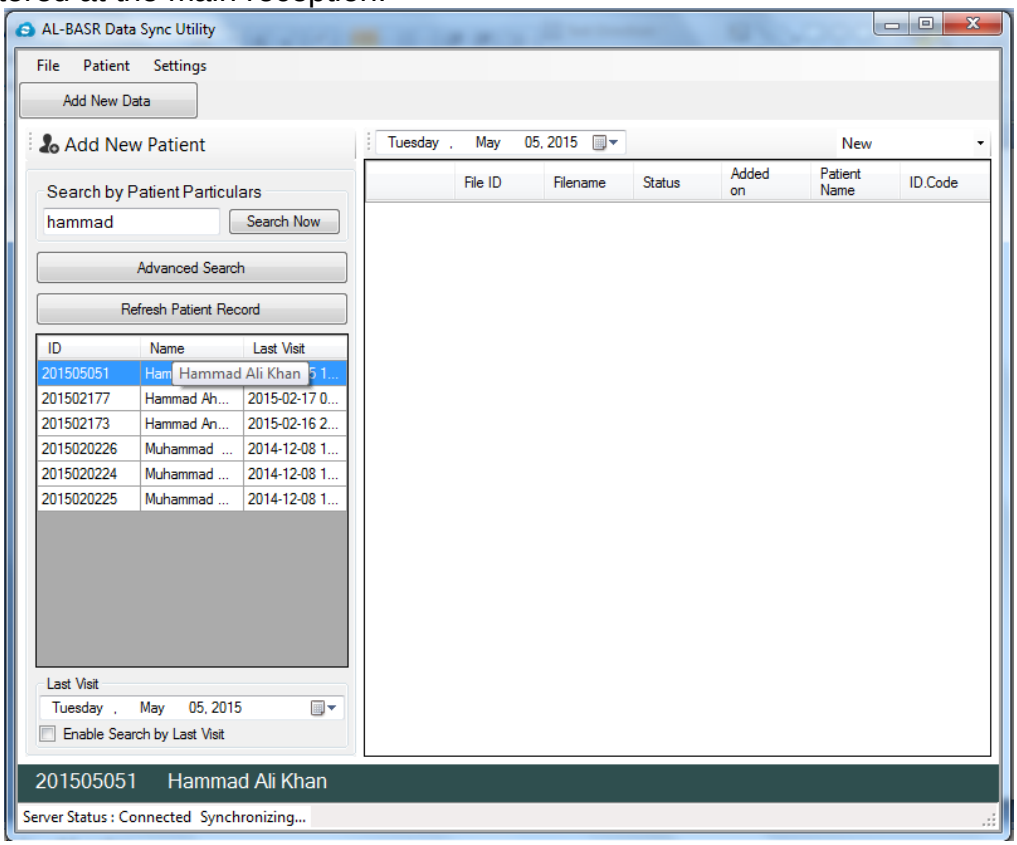


AL-BASR Data Sync Utility (DSU)

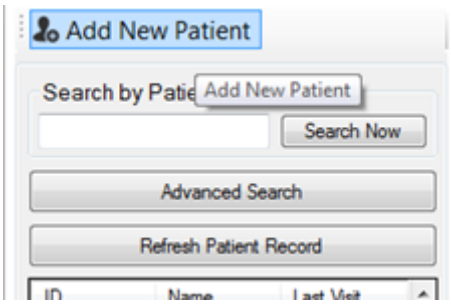
AL-BASR Data Sync Utility is installed at eye diagnostic lab terminals like; FFA Camera, OCT Camera etc…

After performing a particular test, a lab operator can **attach the output files** or folders, like **FFA images** or a folder containing **OCT images and videos** with the **patient's visit.**

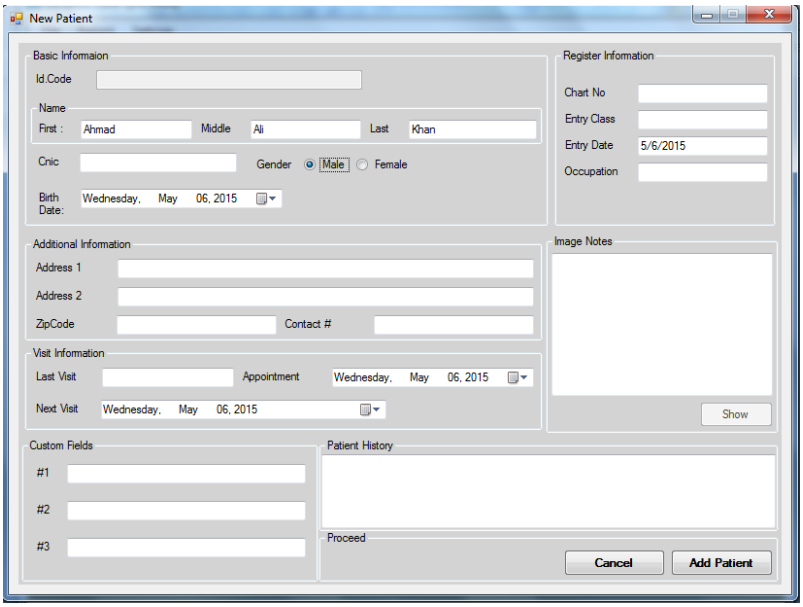
Any file format can be uploaded, which may also include scanned images. Data Sync Utility also provides **Patient Registration,** in case a patient was not registered at the main reception.



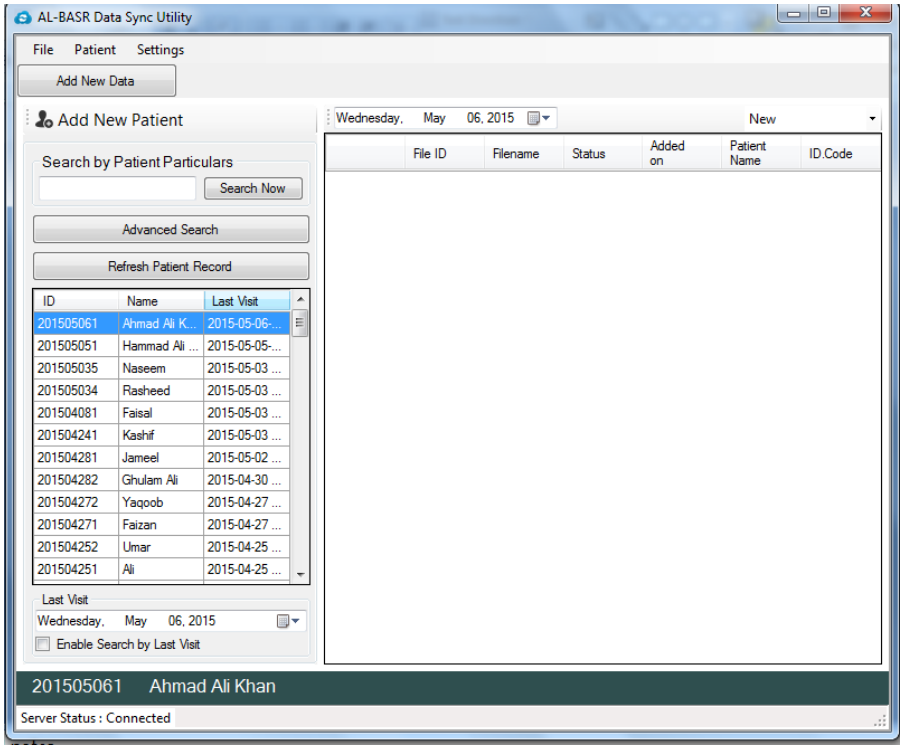
- **Patient Registration at Lab Terminals**
  In case a patient is not registered at main reception; it can be registered at a Lab Terminal, by clicking on **'Add New Patient'** button on AL-BASR DSU.



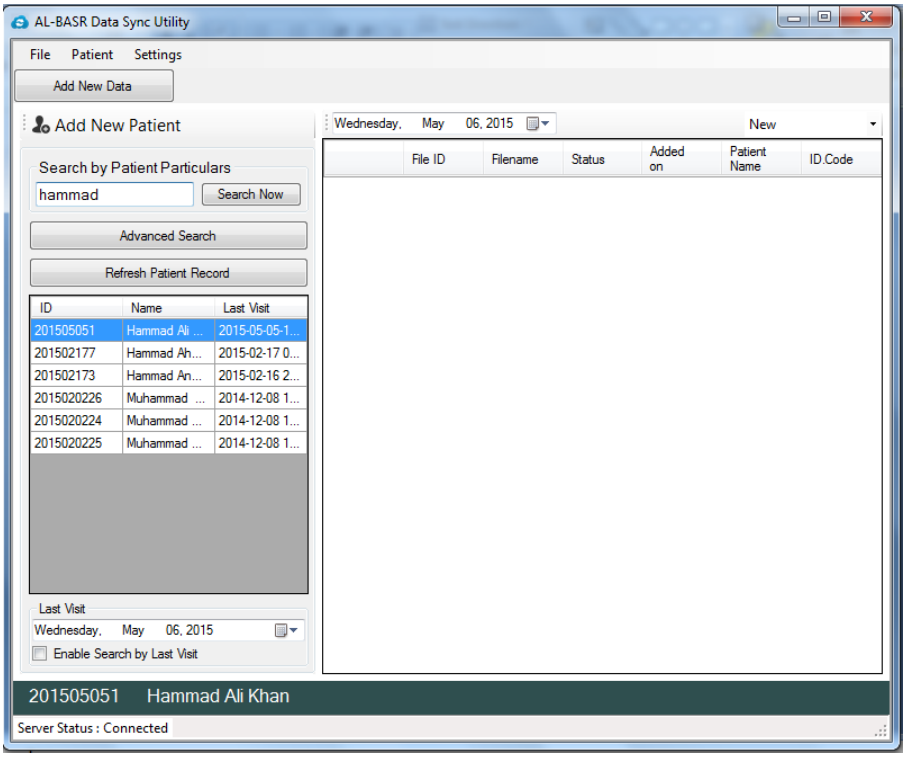
A similar registration form is displayed for patient registration.



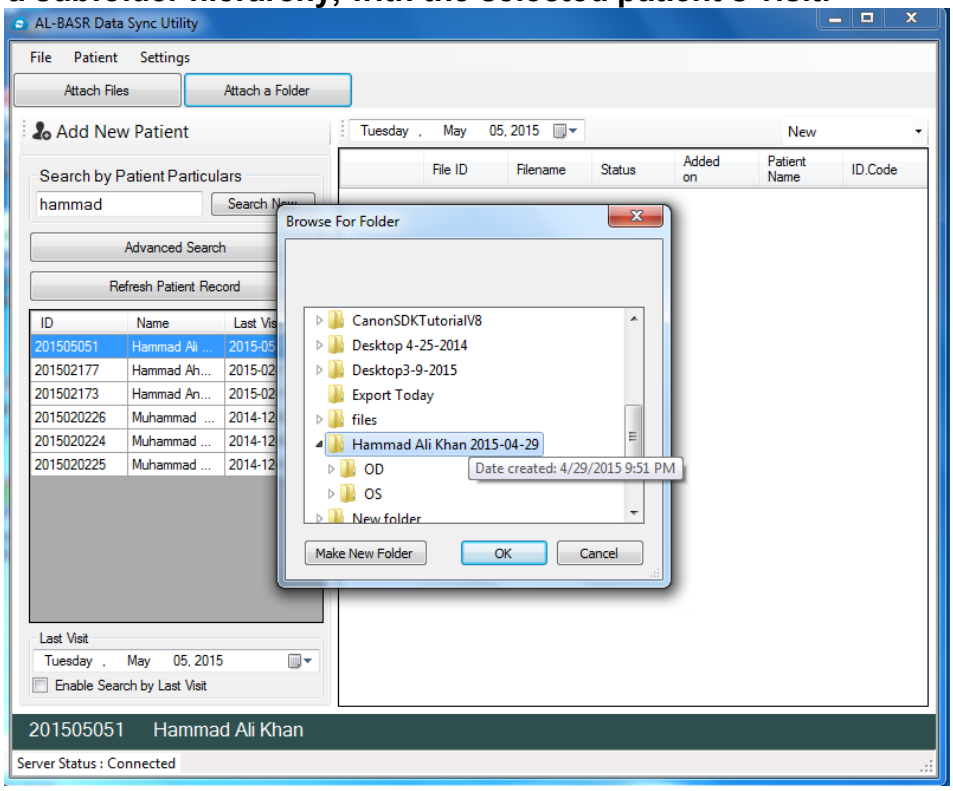
A **newly registered** patient is **selected automatically (gray bar at the bottom displays ID & Name of the selected Patient)** and is also displayed at the top of the list of patients in **patient search tool.**



1. **Searching For Existing Patient: Hammad Ali Khan**
   Window in the figure below is showing the **search results** when a patient is **searched by the name 'hammad'.** Since Hammad Ali Khan **is the most recent** patient with that name, he is displayed at the **top of the list** and is **selected automatically.**

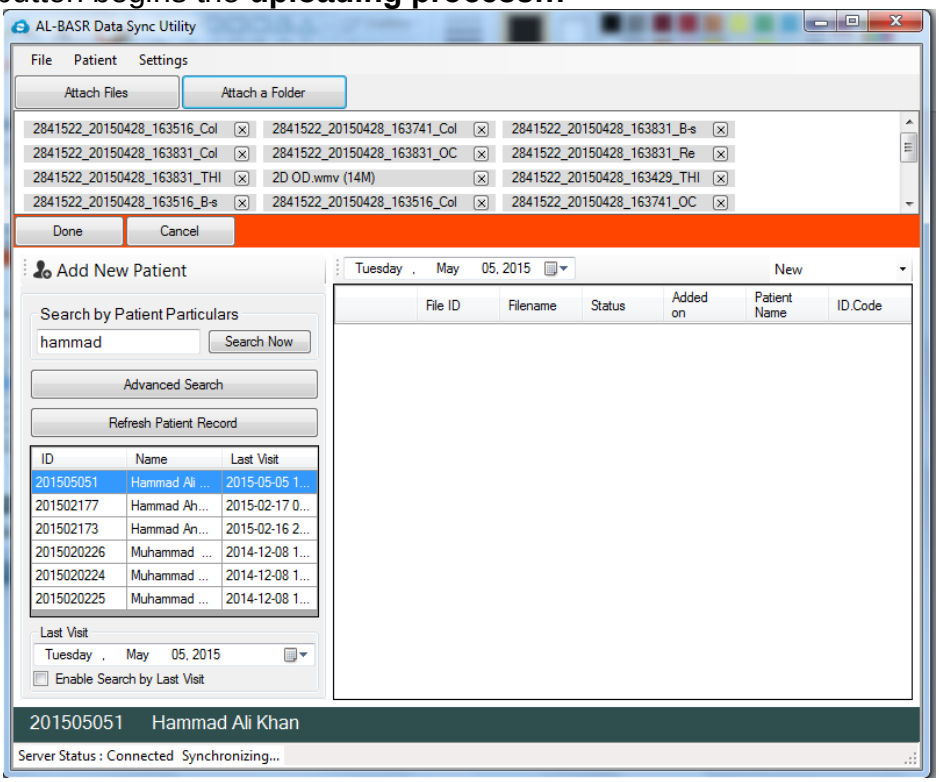


2. **Attaching test results with a Patient's Visit**
   After a patient is selected, '**Add New Data' button show Attach Files or Attach Folder option** buttons, which allow user to add **multiple files** or a **single folder having a subfolder hierarchy, with the selected patient's visit.**

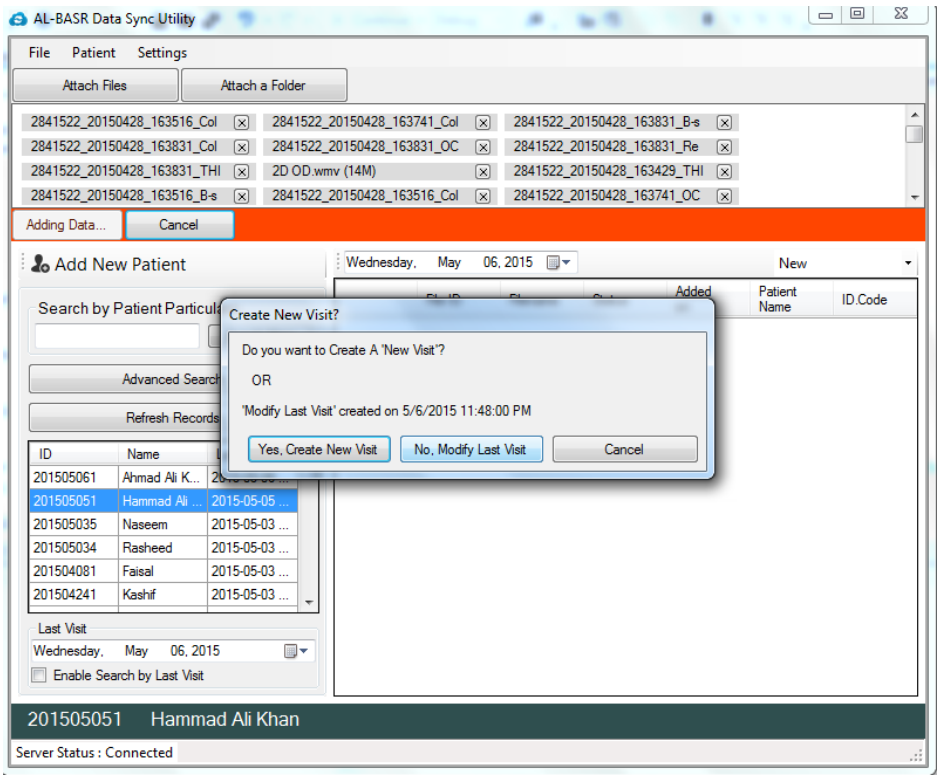


3. **Attaching test results with Patient's Visit**

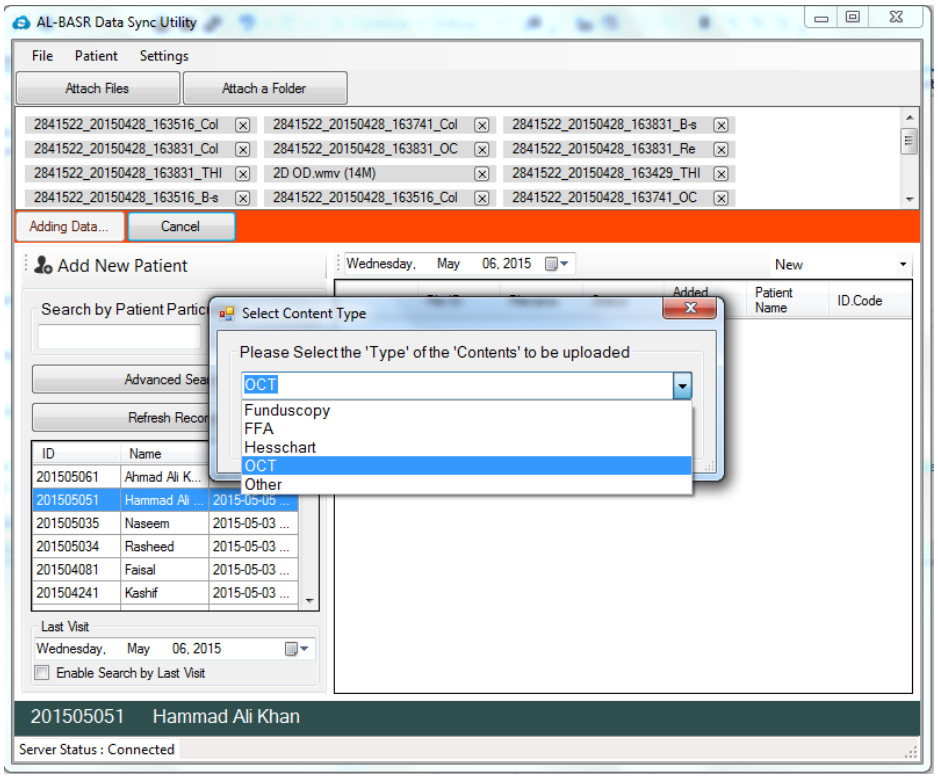
The window shown below displays a list of files that are going to be attached with the patient's visit, more files can be attached here, or any unnecessary file can be removed by clicking the **cross 'X'** button. Once all files are attached **clicking on 'Done'** button begins the **uploading process…**



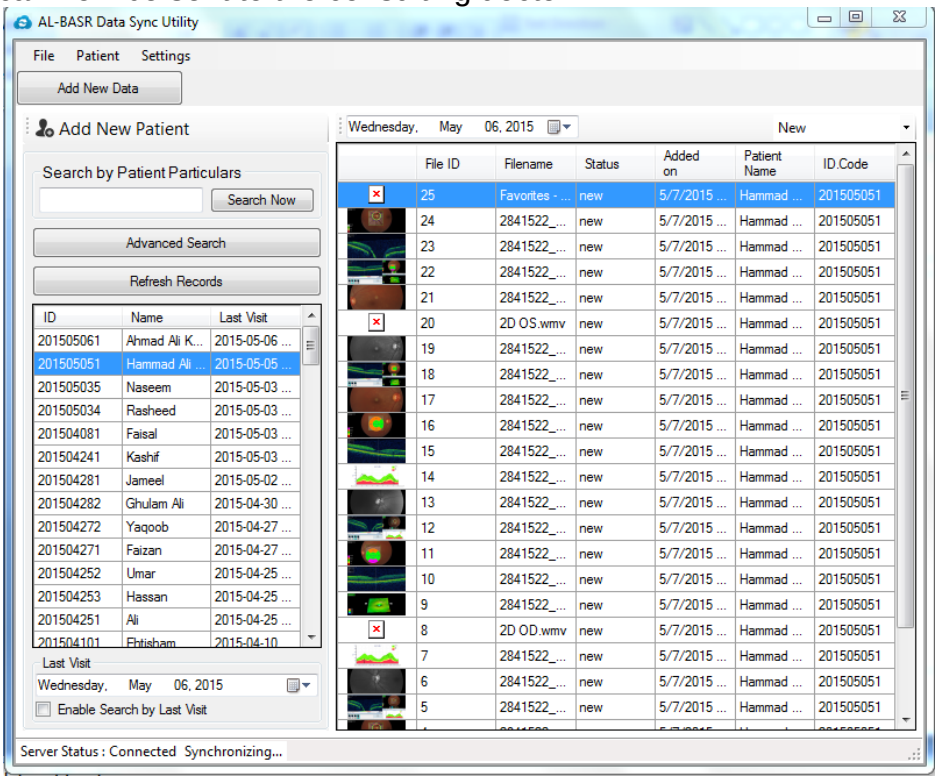
Before uploading takes place **AL-BASR DSU** prompts user to create a **New Visit(If a visit is not already created)** or **Modify the Last Created Visit(when a visit is already created e.g. at the time of Registration),** so the files can be attached to the visit **that is the most latest/current visit.**



AL-BASR DSU asks for the **type of contents/files** that are being uploaded, the types can be selected from the dropdown list, or typed in **Select Content Type Window, which opens up by itself.**

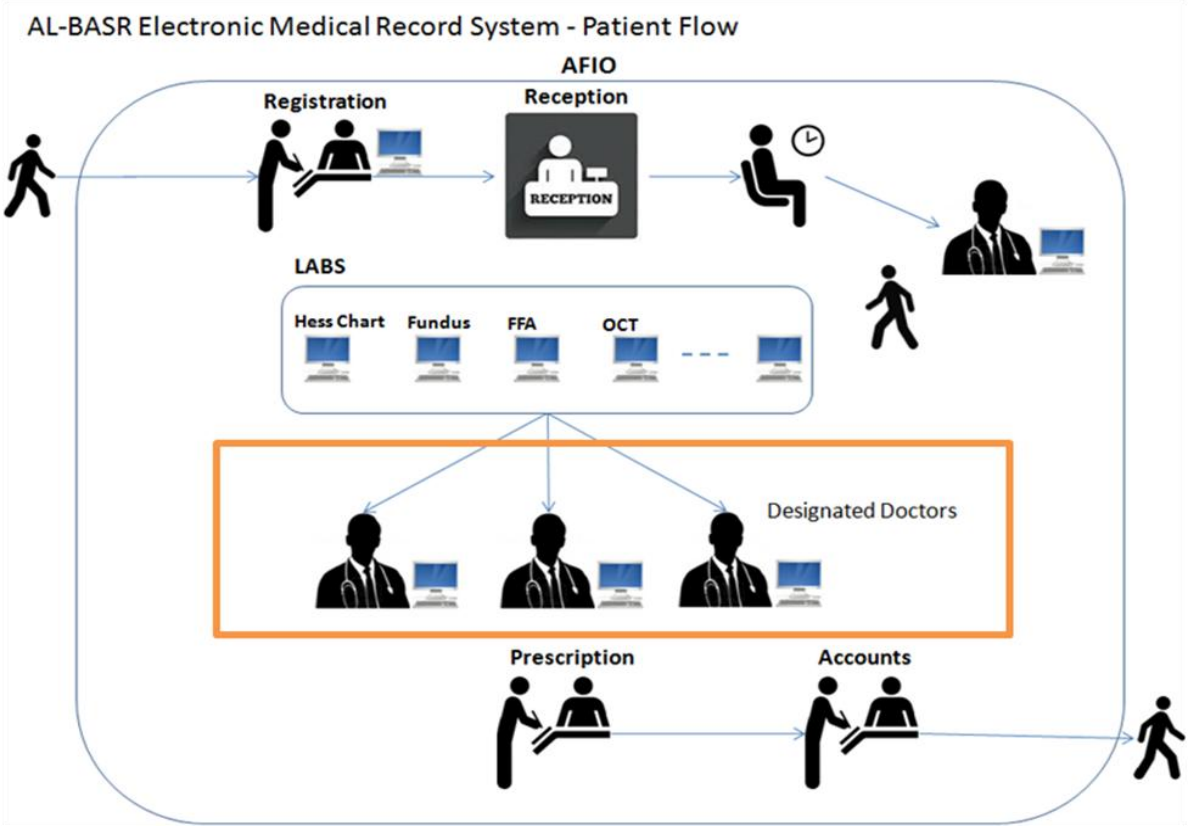


4. **Attached files are being uploaded…**
   The **'new'** files are listed down and are being uploaded…
   Patient can now be sent to the consulting doctor.

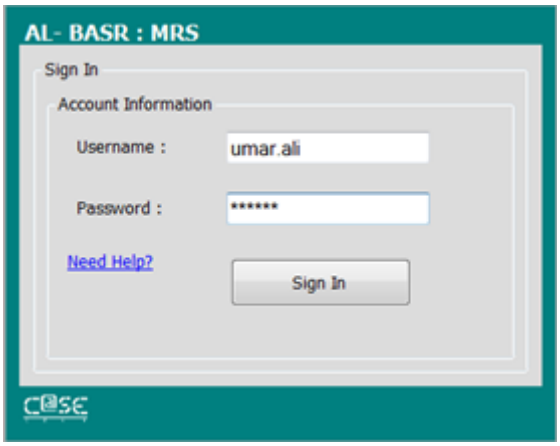


Consultation by Doctors

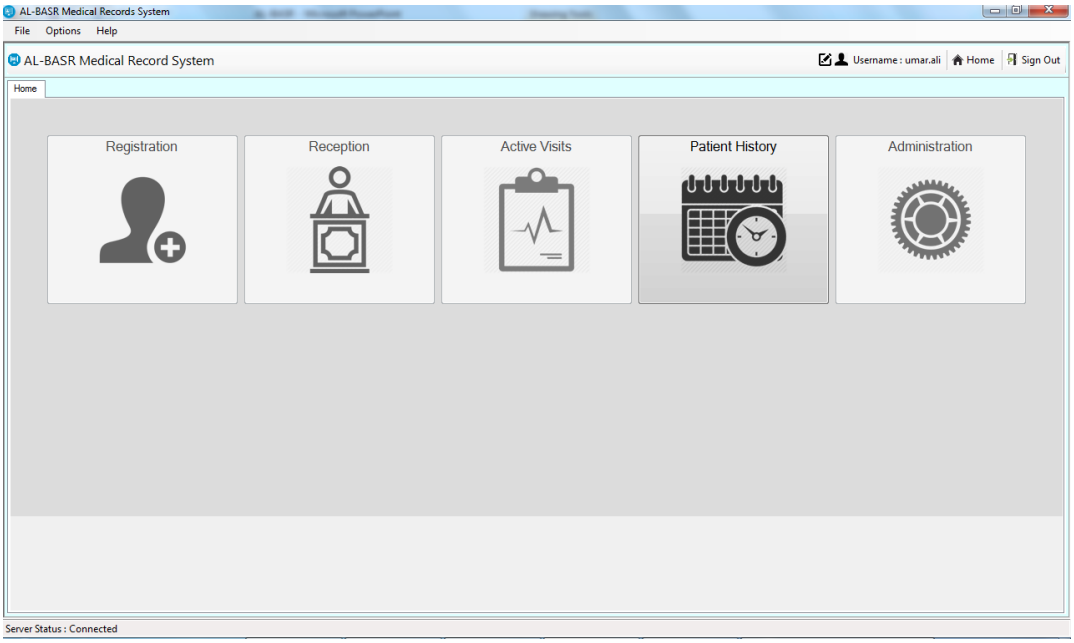
After performing the designated laboratory investigations a patient is sent to the **consulting doctor for the consultation** based on the findings. All **investigative reports were attached with the patient's visit** as the patient was being diagnosed. Now a doctor would see all these reports from his/her terminal using AL-BASR MRS, and would conclude a visit by writing a **prescription.**



1. Signing in AL-BASR as a Doctor

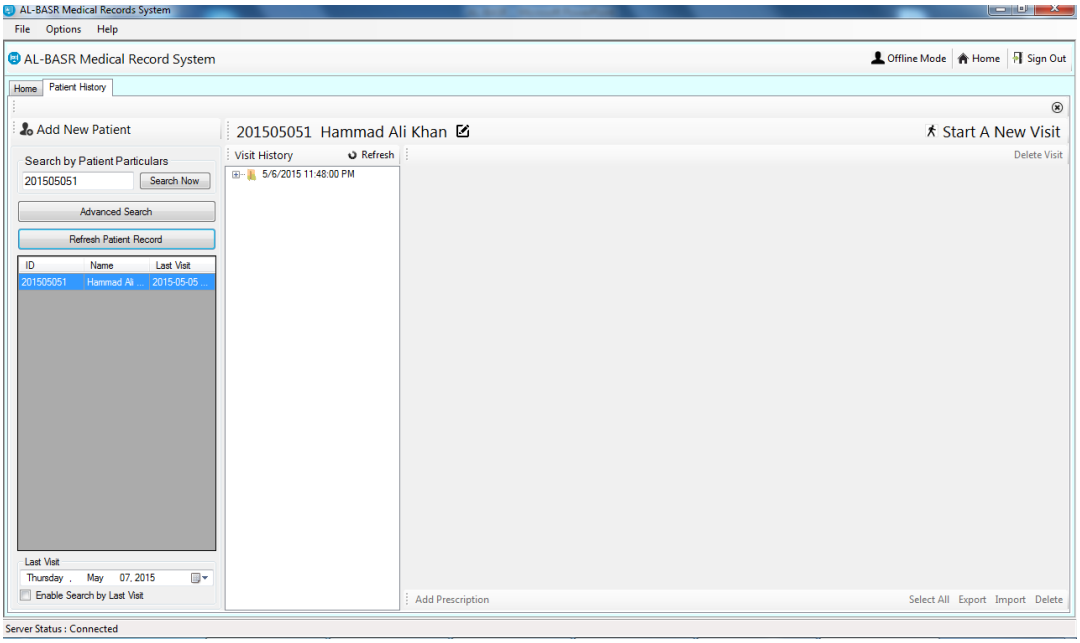


2. **Doctor's Account View: Consultation**
   Doctor will open up patient history by clicking on the **'Patient History'** button on the **Home Page.**



3. **Searching for Patient: Hammad Ali Khan;**

   A doctor searches by **patient's ID '201505051', in the Patient Search Tool. The search result list now shows patient 'Hammad Ali Khan'. Clicking on that name in the list opens up patient's visit history**

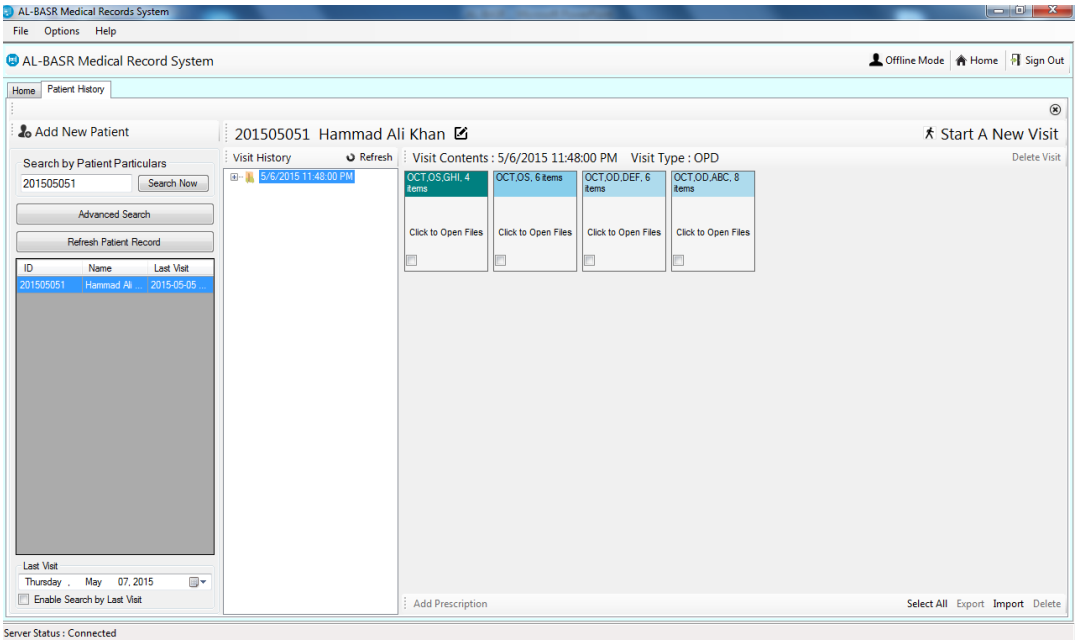


   Patient's visit history can now viewed in the **'Visit History'** window **right below where the patient's id & name is being displayed.**

   A folder with date & time can be seen, this is actually a **visit that was created at the time of registration**, it now contains the **OCT images & Videos** uploaded at the lab by **a Lab Operator.**

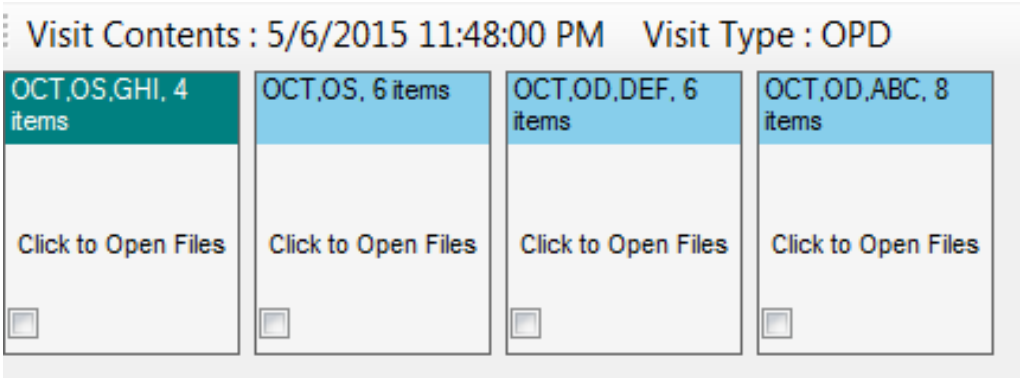
Clicking on the visit folder opens up its **contents/files** that were attached during the patient's diagnosis.

Visit Content Tiles can be seen in the window below



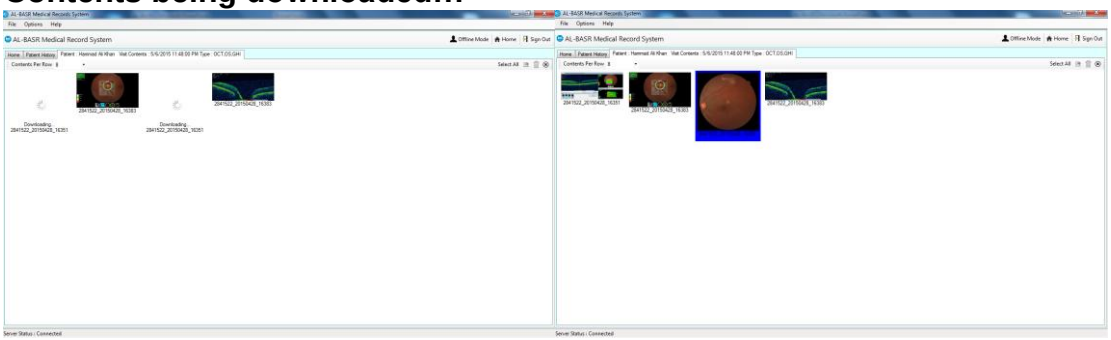
4. Downloading Files…

Content tiles behave like subfolders, containing one or more contents/files inside, the **heading** shows the **description and a number of items inside**.



Clicking on a tile opens up the contained contents in **another tab**, if the contents are not yet downloaded, **the downloading automatically initiates.**

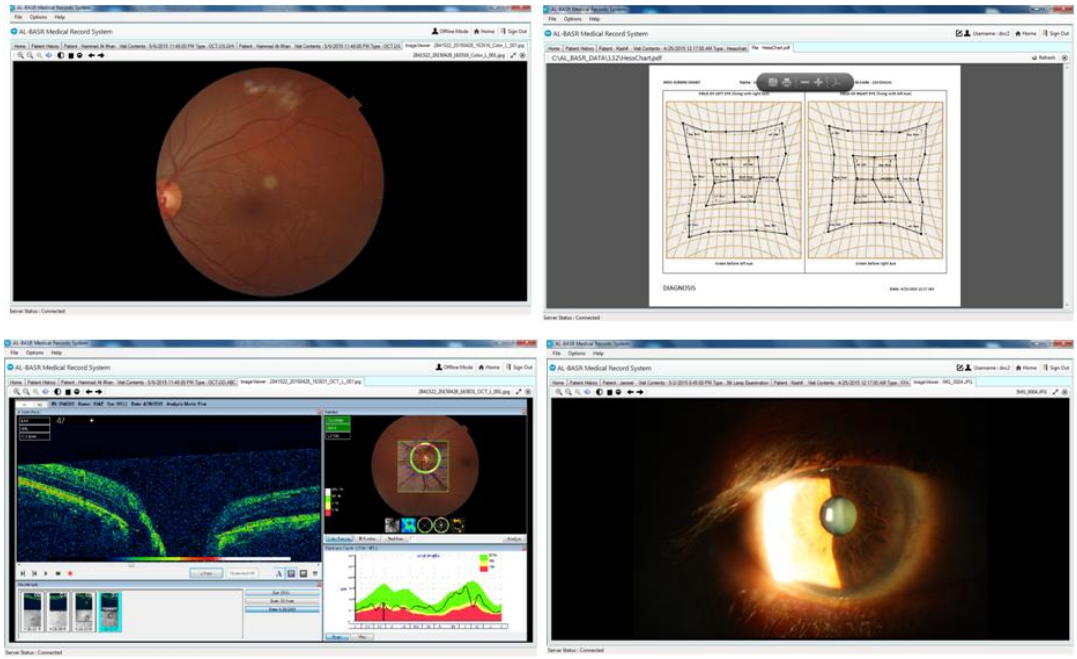
Contents being downloaded…

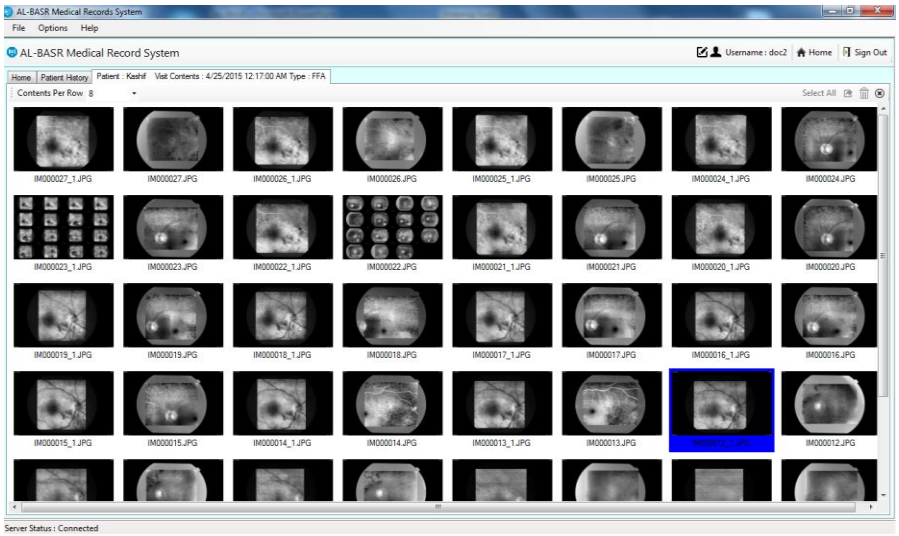


5. **Visit contents can be further examined.**

Click opening a content tile, downloads (if necessary) all files contained in it. Each file can further examined or viewed by double clicking on it. The file is opened inside a **File Viewer** window tab.

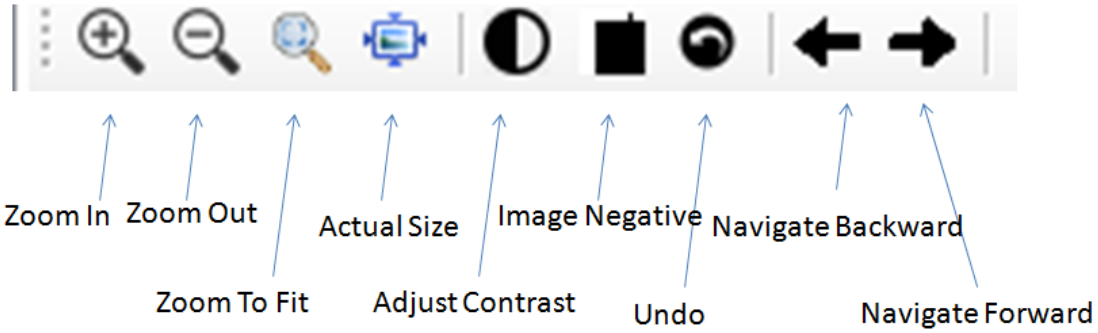
Some example files opened in the **File Viewer** are shown in the figure below:



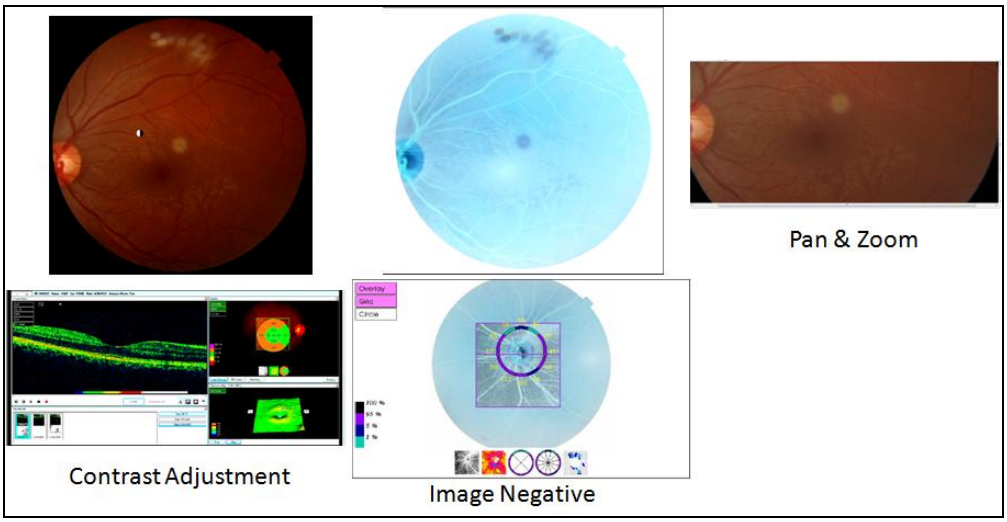


File Viewer Window

Image Processing Toolbar contained in the File Viewer helps in examination of images.

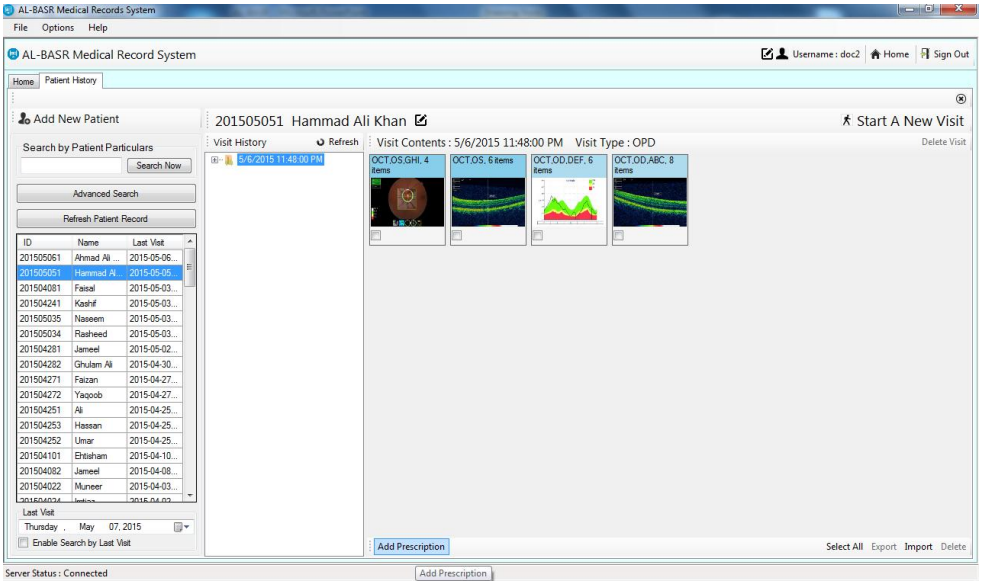


Some examples of using the toolbar options:



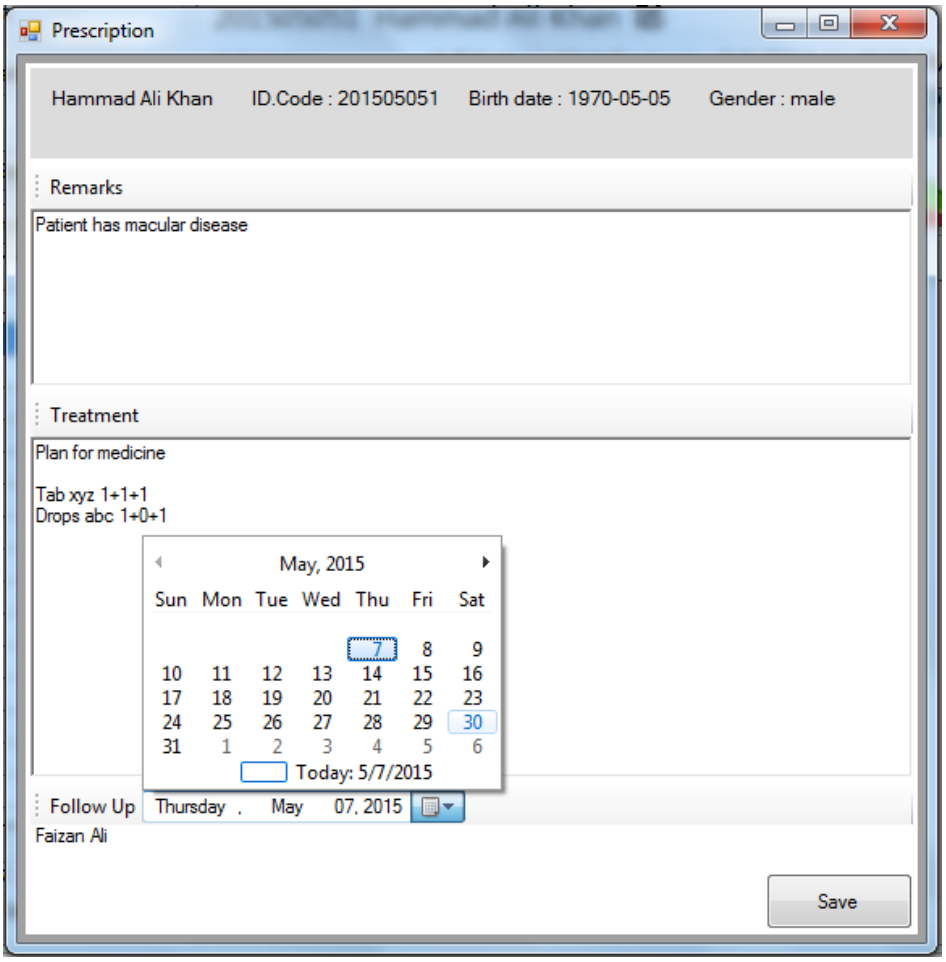
6. Digital Prescription

Doctor can add prescription after viewing the test results, by clicking on the **'Add Prescription Button'** at the bottom, a prescription window is opened.



1. Digital Prescription: Prescription Window

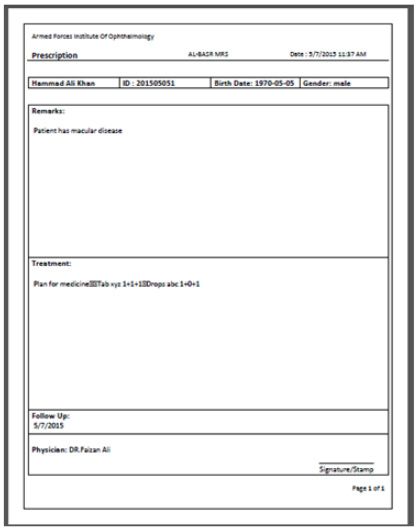
A digital prescription window contains, **Remarks, Treatment & Follow Up fields** which can be added like in the example below.

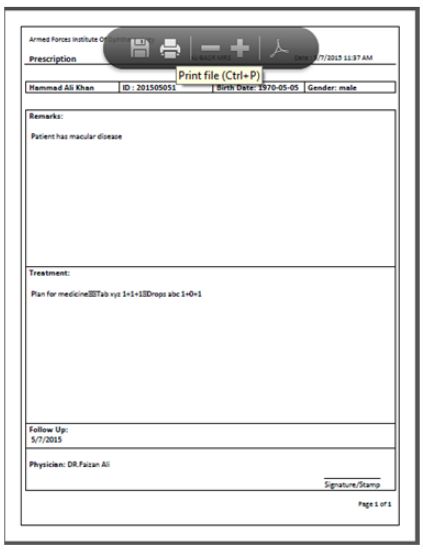


Clicking on the **'Save' button** the prescription is saved & attached to the visit in PDF format, a print can also be taken and handed over to patient.

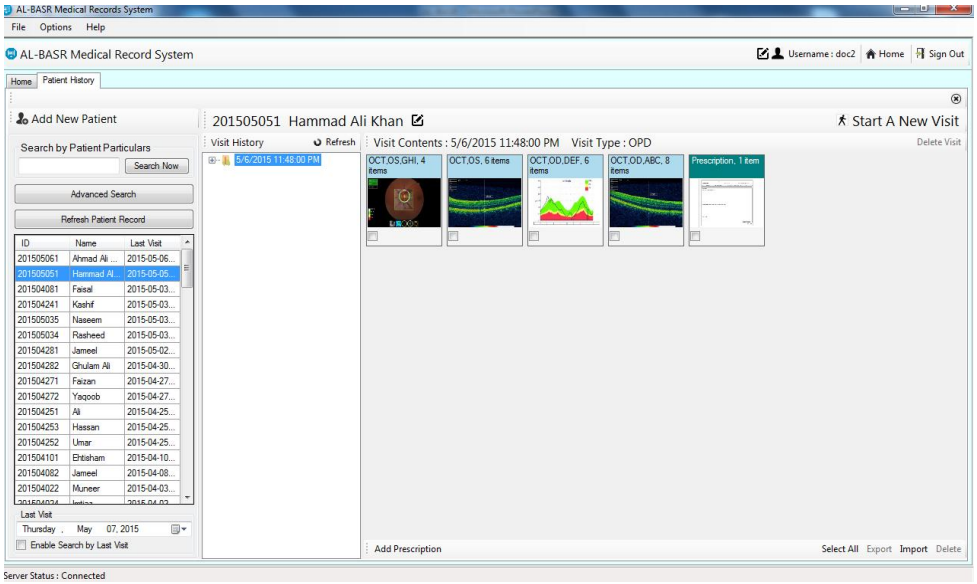
Generated Prescription File

A print can be taken in this manner





2. Prescription Attached With the Visit:

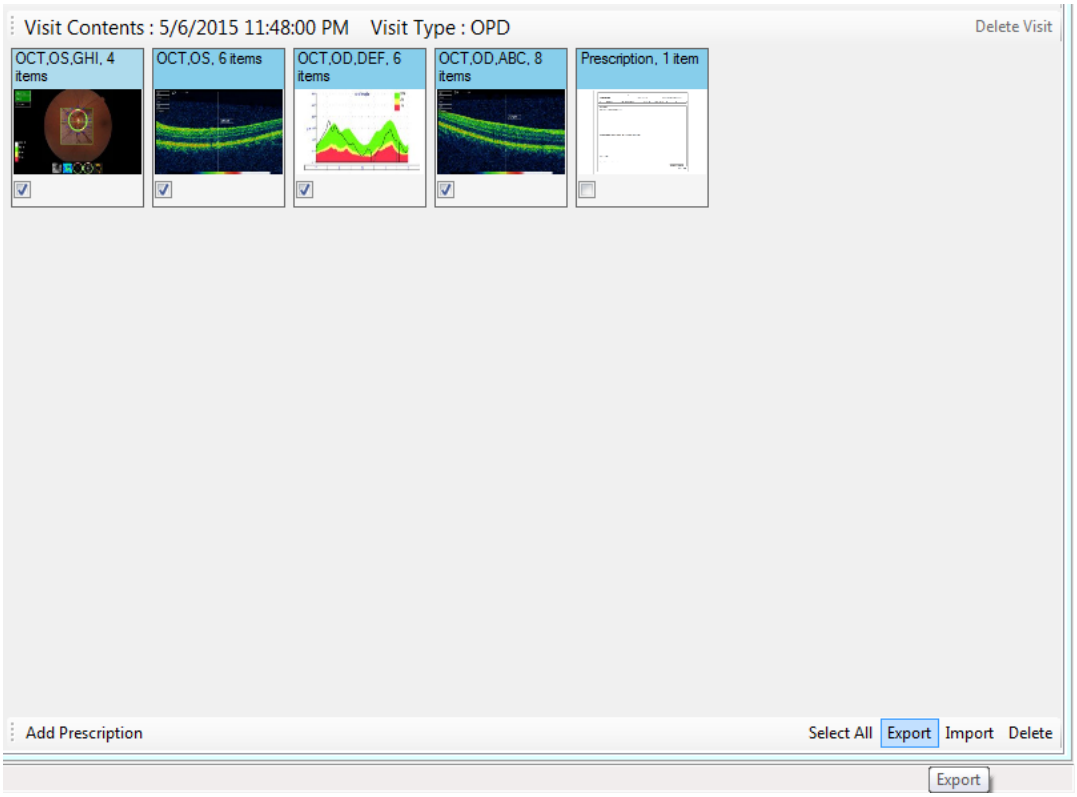


3. Visit Content Export, Import & Deletion.

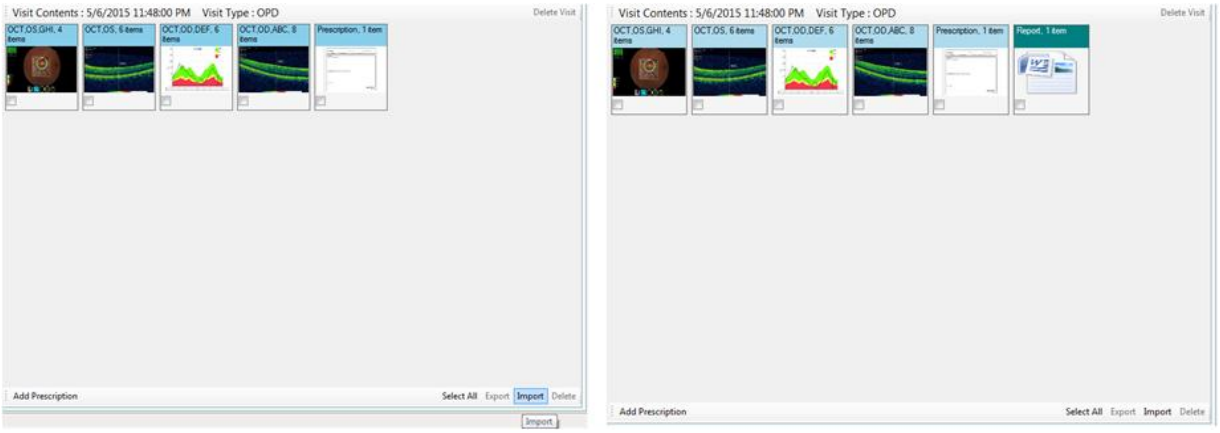
a. File Export

Contents contained in visit can be **exported to a drive on disk** for the purpose of make a CD for a patient.

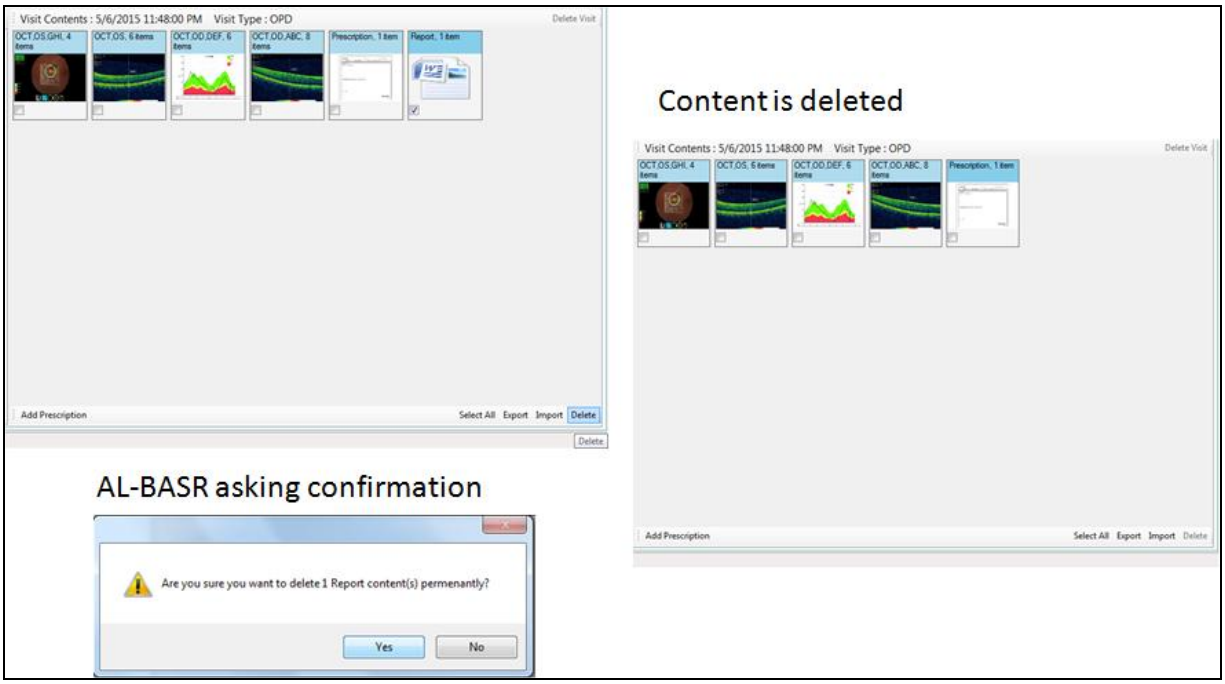
The contents to be exported **must be checked** like in the below window and **the 'Export' button** can be clicked to export them to the destination at disk.



b. **File Import**
Any file can also be imported into the visit, by clicking on **'Import'** button and selecting a File to import; this action attaches the imported file with the visit.



c. File Deletion
To delete a file, it must first be checked/selected, after selection a **'Delete'** button deletes the content after asking confirmation.



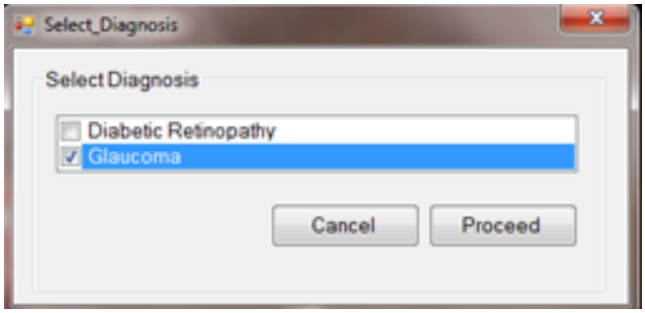
Automatic Eye Diagnostic Capabilities

AL-BASR provides the capability of automatic diagnosis on Fundus Images.
Glaucoma & Diabetic Retinopathy Analysis are currently available

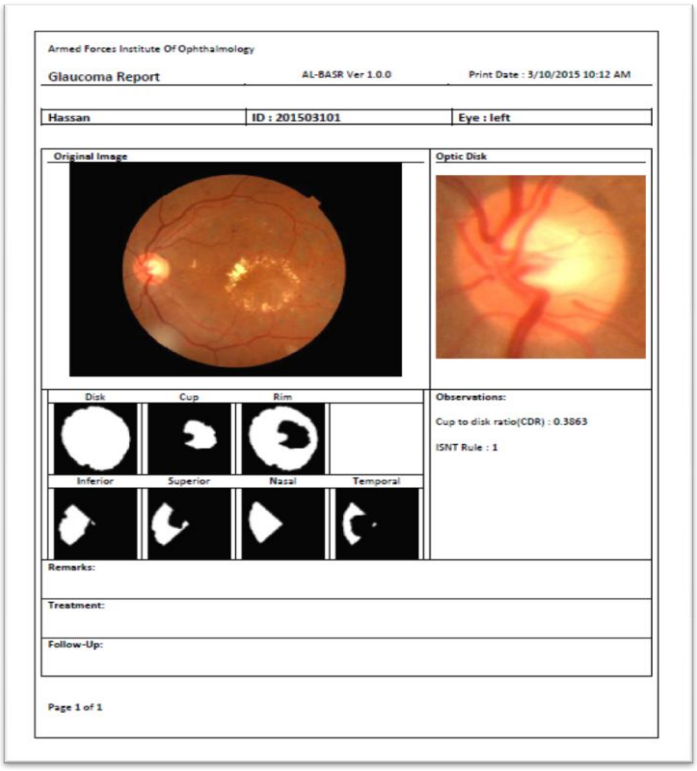
1. Image Automatic Analysis:

   Image analysis can be performed by clicking on **Perform Image Analysis Button** located in the toolbar in the File/Image viewer.

At Analysis Selection Window(showed after button click), a user can select one or all available Analysis, proceeding from there the analysis procedure starts up.



2. **Glaucoma Report**
   After a successful analysis, the analysis report is generated like the one below.


Armed Forces Institute Of Ophthalmology

Glaucoma Report AL-BASR Ver 1.0.0 Print Date : 3/10/2015 10:12 AM

Hassan | ID : 201503101 | Eye : left

Original Image

Optic Disk

Disk Cup Rim

Inferior Superior Nasal Temporal

Observations:

Cup to disk ratio(CDR) : 0.3863

ISNT Rule : 1

Remarks:

Treatment:

Follow-Up:

Page 1 of 1

3. **Diabetic Retinopathy Report**
   After a successful analysis, the analysis report is generated like the one below.

Armed Forces Institute of Ophthalmology

DR Analysis Report AL-BASR Ver 1.0.0 Print Date : 1/29/2015

Minhas Ali ID : 2015012968 Eye:

Original Image

Annotated Image

Observations:

Edema Observation
Severe Macular EdemaNVD Observation

	DR Sign	Count	Area
	Exudates	24	20066
	Hemorrhages	34	3851

Remarks:

Treatment:

Follow Up:

1

Telemedicine incorporated Remote Tele-Screening and Referral System

Constituents:

1. Medical Record System for Hospitals.
2. Fundus Imaging & Diagnostic System for Remote Tele-Screening.
3. Telemedicine System for case referral to major/central hospitals.

Medical Record System (AL-BASR MRS)

AL-BASR Deployed at Local Hospitals is designed to represent data that accurately captures the **state of patient at all times.** It is an **Electronic Patient Health Record System**. A step towards a **paper-less**, and **an efficient** health care solution.

Allows for an entire **patient history** to be stored and viewed without the need to track down **patient's previous medical records**. It assists in ensuring that data is **Accurate, Appropriate and Legible.** By maintaining one modifiable file, that is updated constantly, it **reduces data replication.** Eliminates the issue of **lost paperwork**

It is capable of being shared across different health care settings, through **a network-connected information system.**

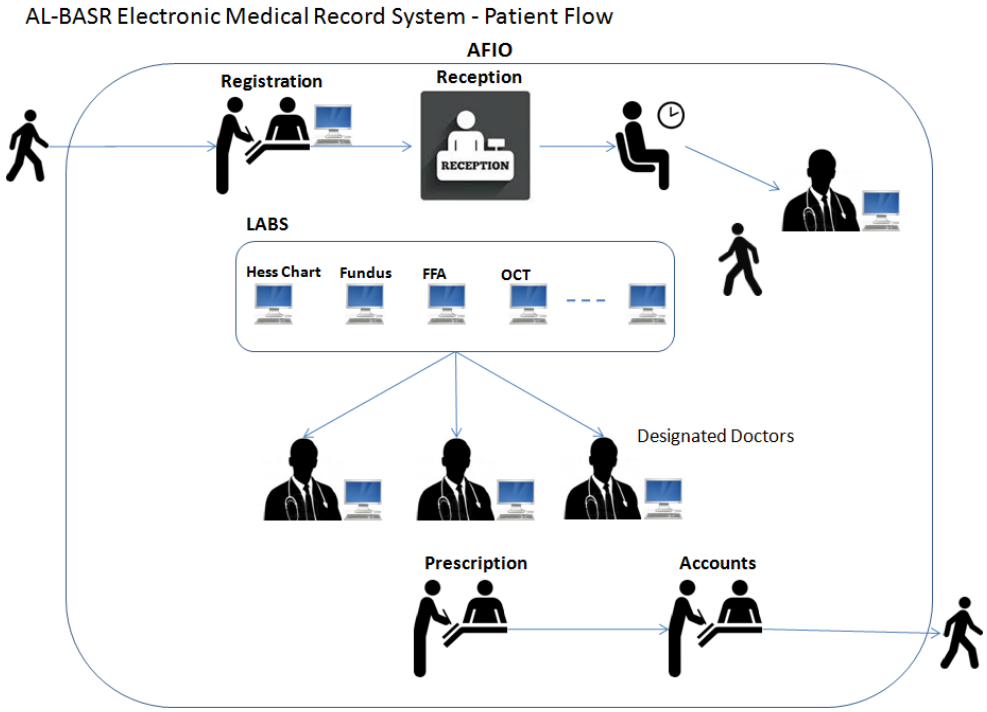


Figure 1

The Tele-Screening Process

1. A local hospital conducts tele-screening in adjoining areas, by dispatching medical vans with diagnostic and screening capabilities. Patients are registered on the spot and their Funduscopy Imagery is taken. Upon which

automatic diagnosis is applied to find out major symptoms that contribute towards a serious vision impairment and blindness. The acquired data from the screening process is communicated automatically to the local hospitals' Medical Record Systems (AL-BASR MRS), which maintain the medical history, and therefore allow referral of serious cases to the Central Hospitals (Using Telemedicine System) where senior or experienced ophthalmologists can give their valuable consultations remotely.

2. Remote Tele-Screening

A medical van equipped with Fundus Imaging and diagnostic capabilities is sent to rural areas to conduct tele-screening exercise.

The operators use specialized software designed specifically for the telescreening purpose. **The software (AL-BASR Diagnostic System)** is capable for acquiring images from a fundus camera and has automatic diagnostic capability to determine different stages of **Diabetic Retinopathy and Glaucoma**. The **diagnostic reports and the images** acquired during the process in communicated automatically to the local hospital via a network established between the vehicle and the hospital's Medical Record System **(AL-BASR MRS)**.

Figure.2 showing a step-wise flow of the complete tele-screening process

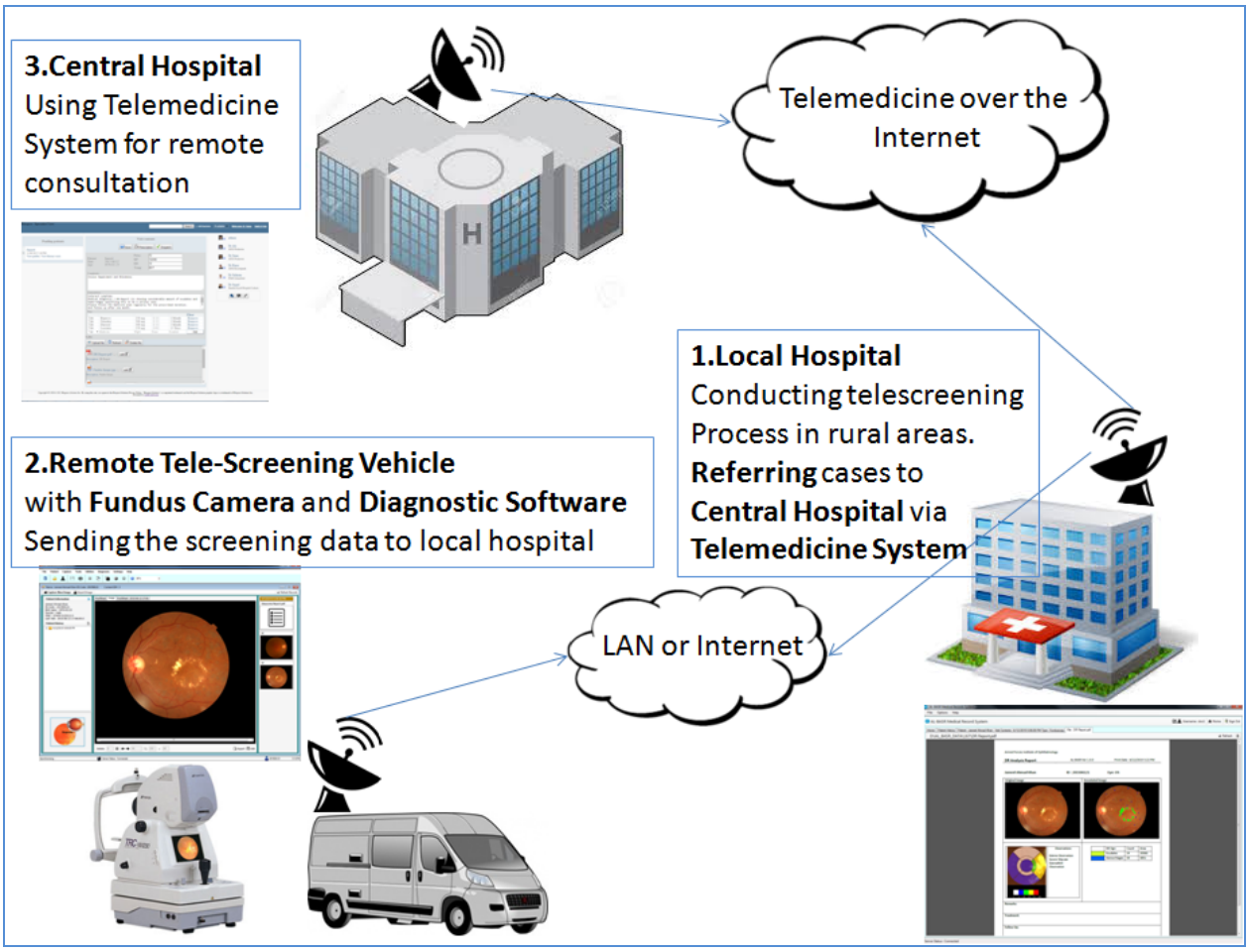
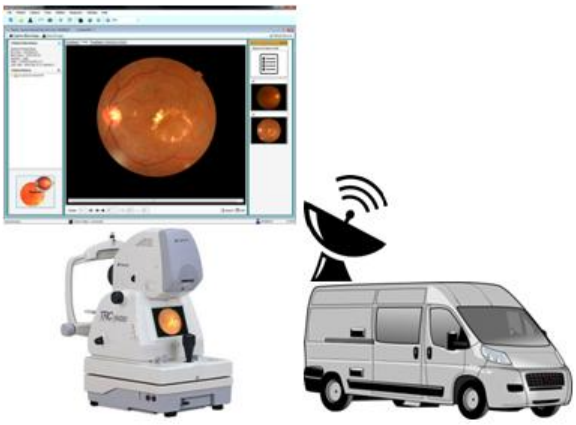
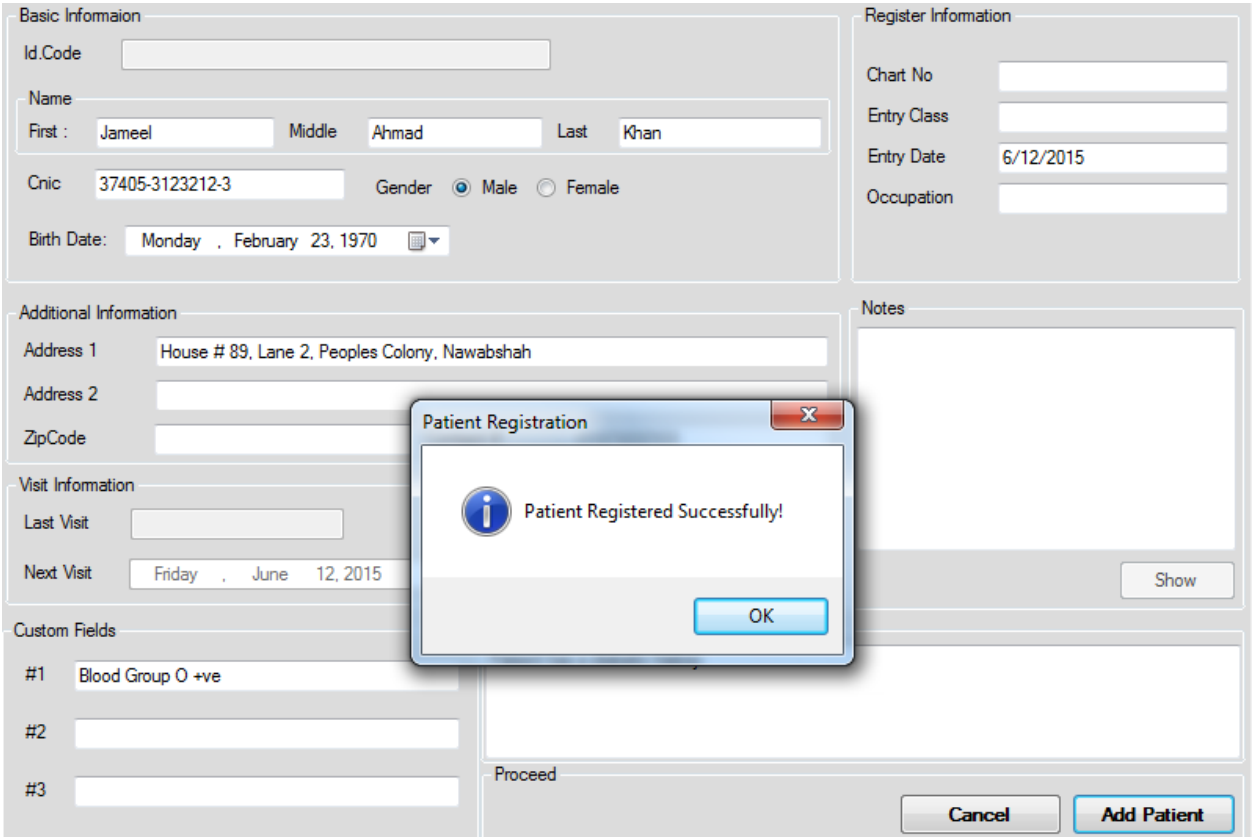


Figure 2

Patient Registration and Medical Diagnosis at Tele-Screening:

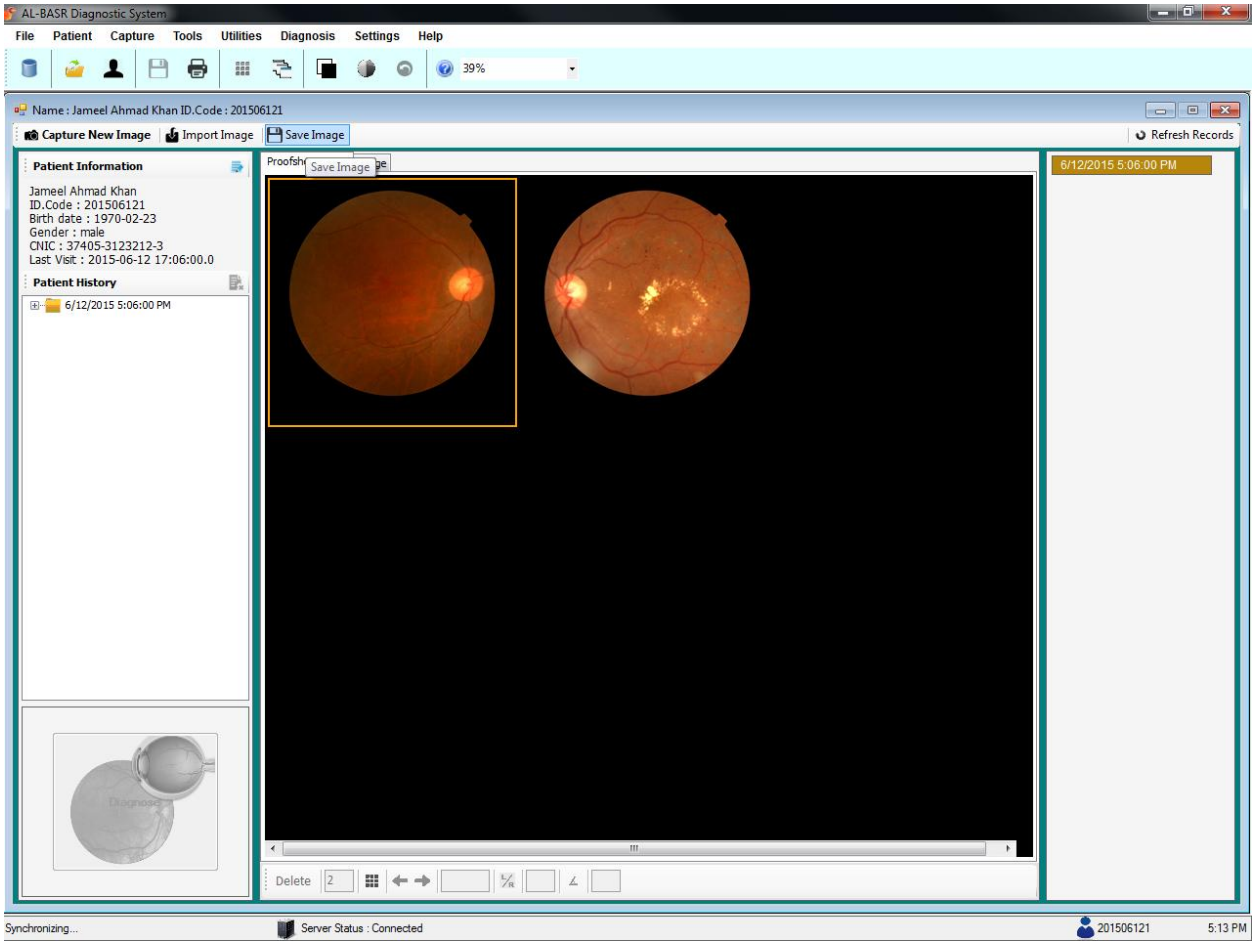


AL-BASR Diagnostic System

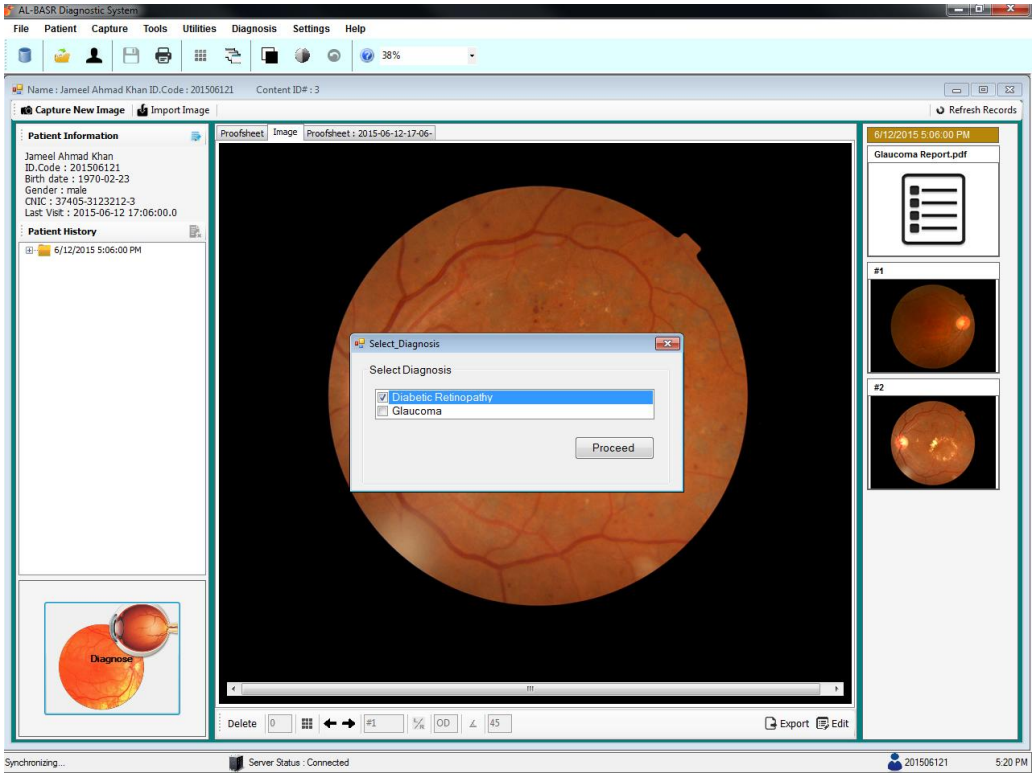


Patient Name: Jameel Ahmad Khan

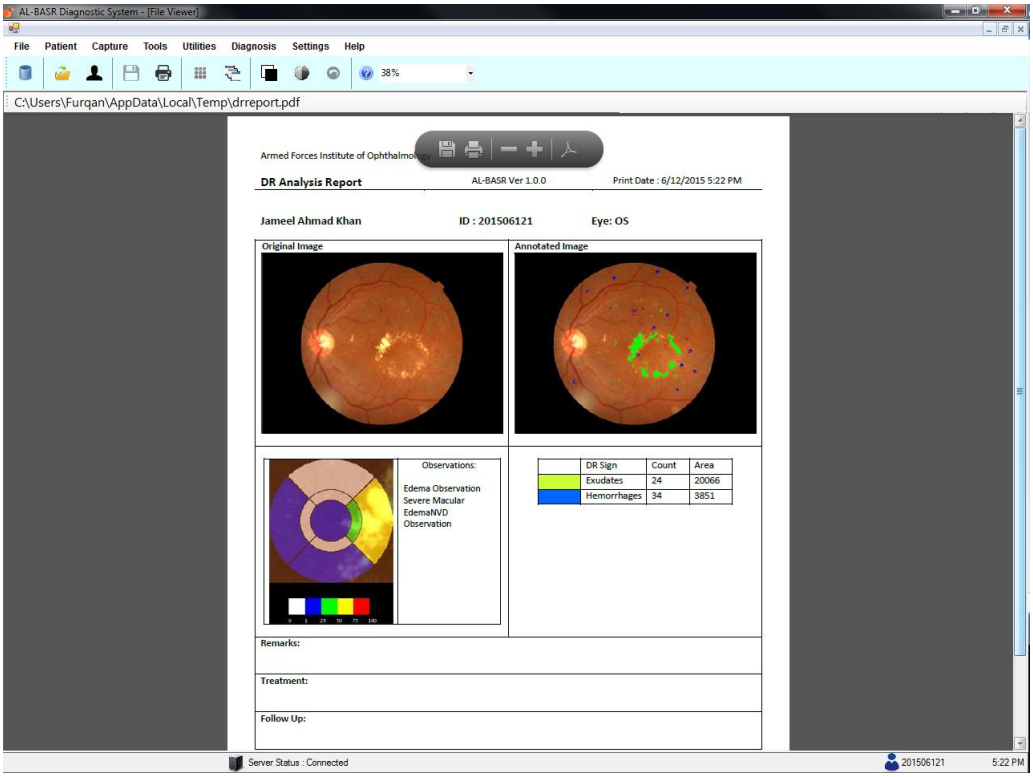
Image Acquisition from a Fundus Camera



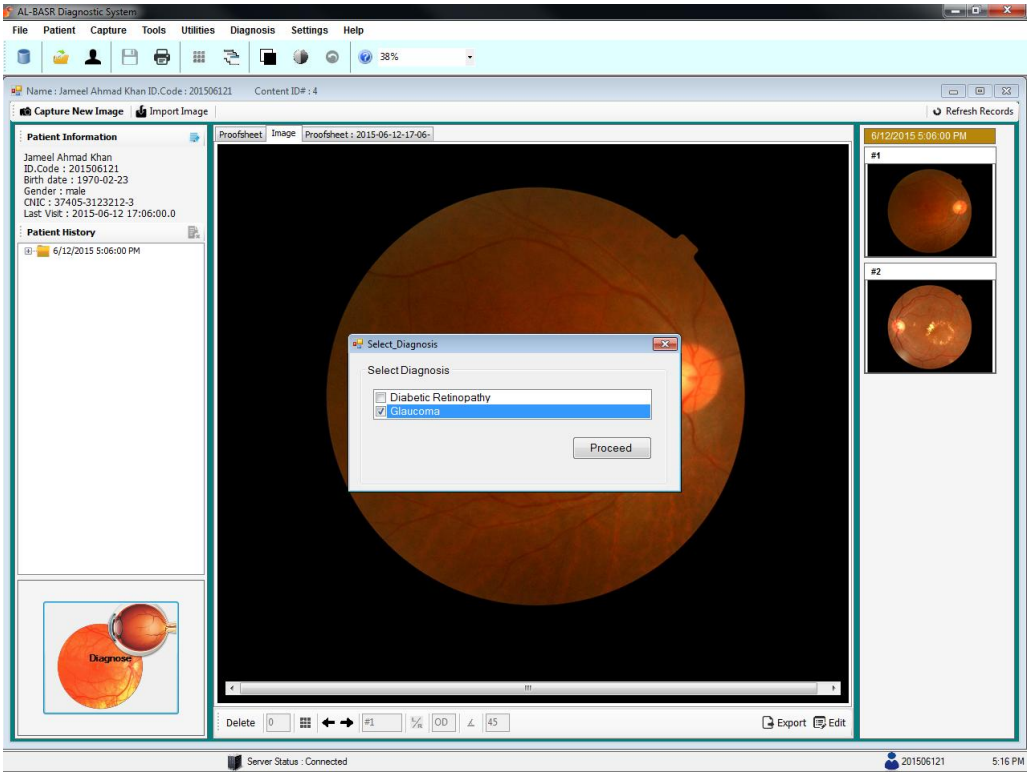
Performing Automatic Diagnosis: Diabetic Retinopathy



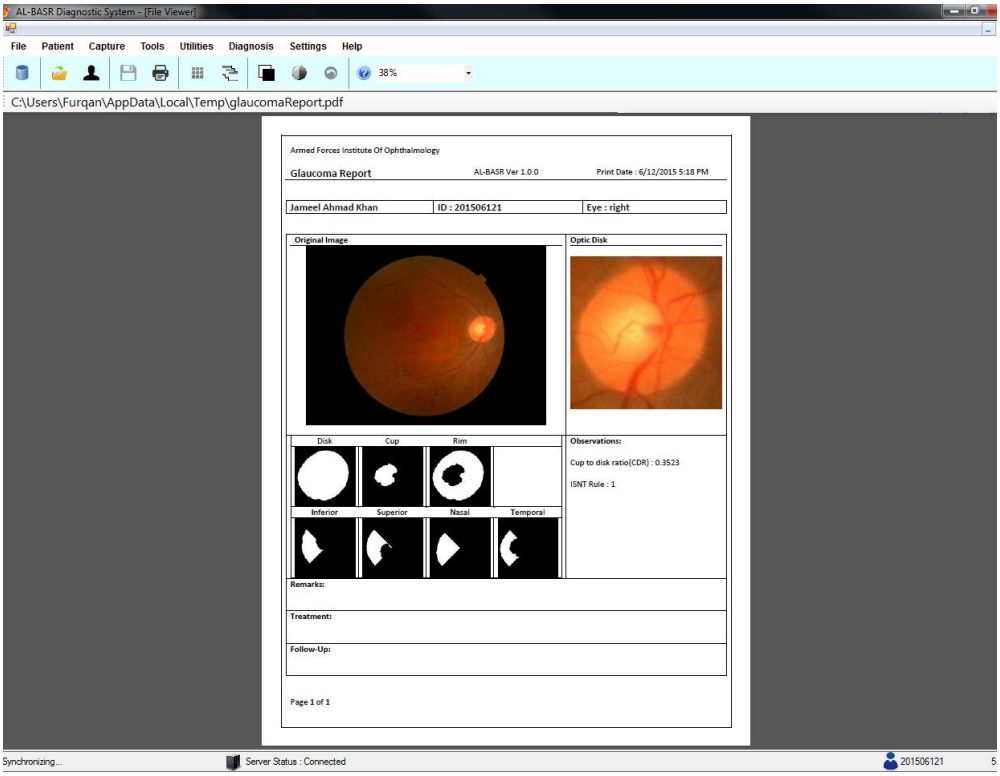
Diagnosis Report: Diabetic Retinopathy



Performing Automatic Analysis: Glaucoma



Diagnosis Report: Glaucoma

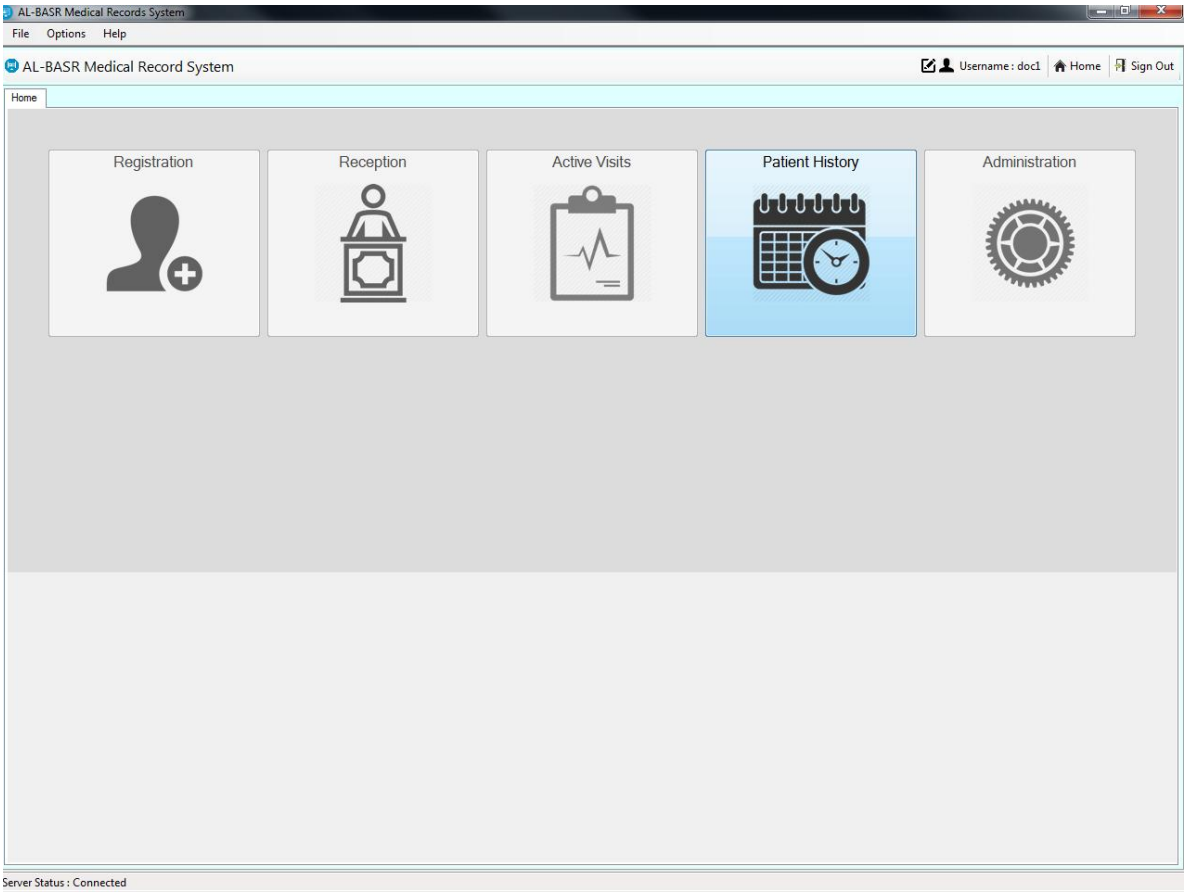


Record Keeping at Local Hospital using AL-BASR Medical Record System

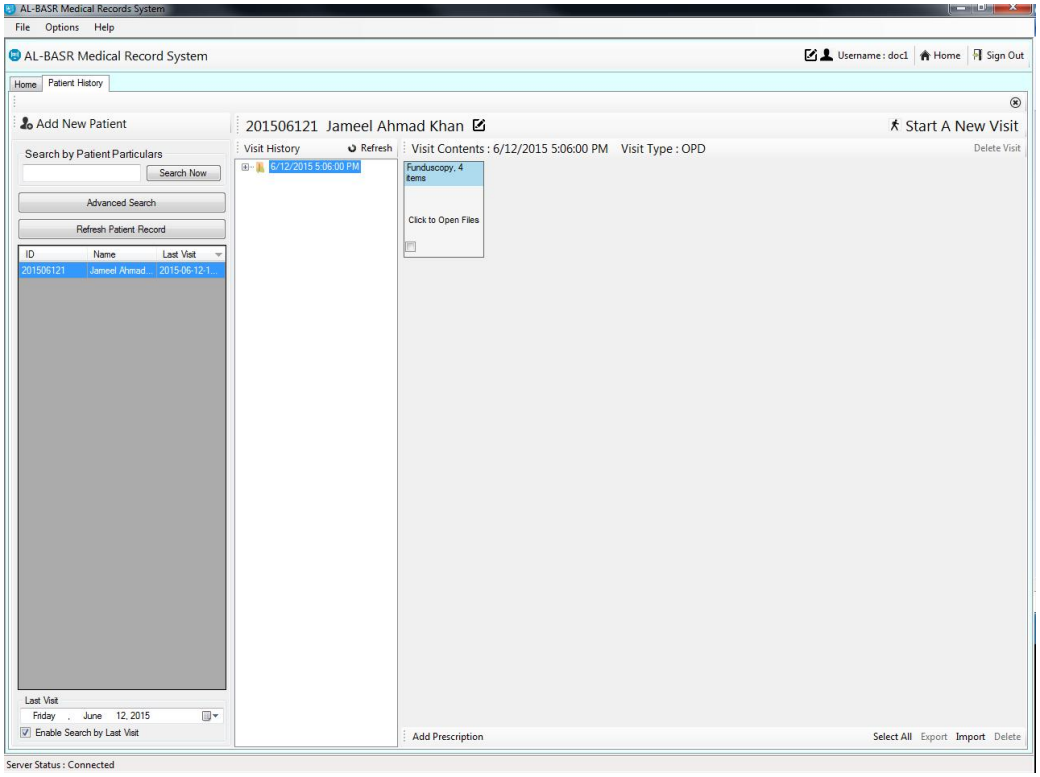
The tele-screening results are automatically transmitted **to AL-BASR MRS** via a network. AL-BASR MRS maintains patient's screening history, all images and diagnosis reports are stored in AL-BASR MRS. This stored medical record can then be easily referred via Telemedicine System to the Ophthalmologists at the central hospital.

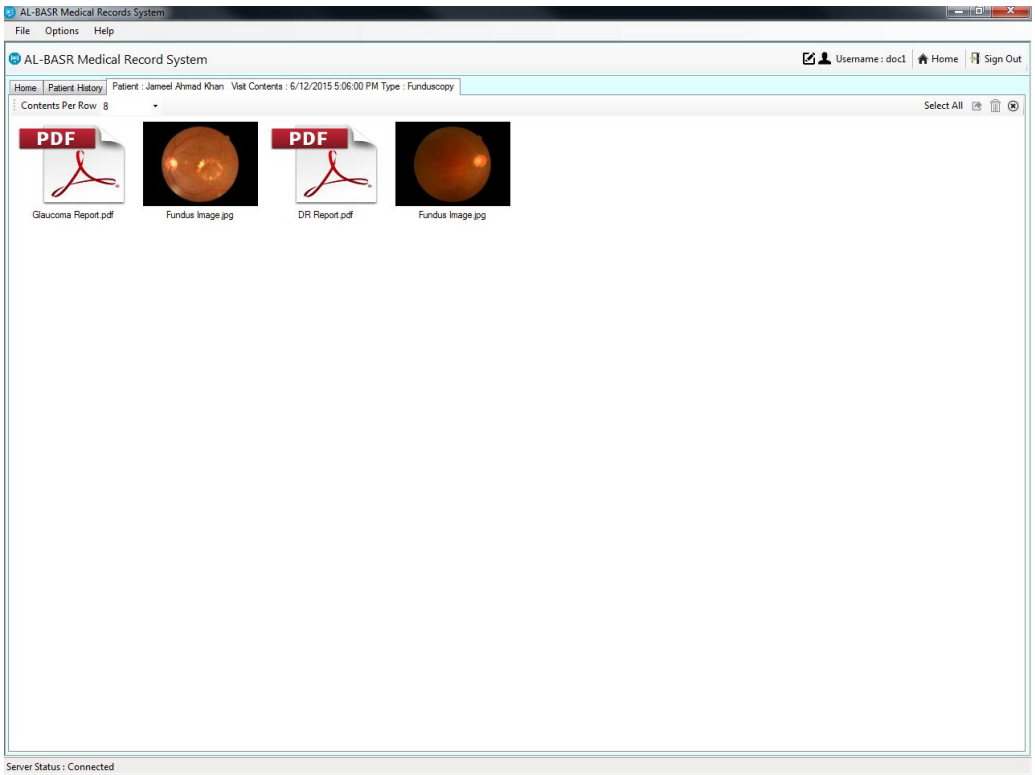
Record Retrieval at Local Hospital using AL-BASR MRS

After logging in to AL-BASR **as an Operator or a Consultant**, patient history button is clicked to retrieve patient record.



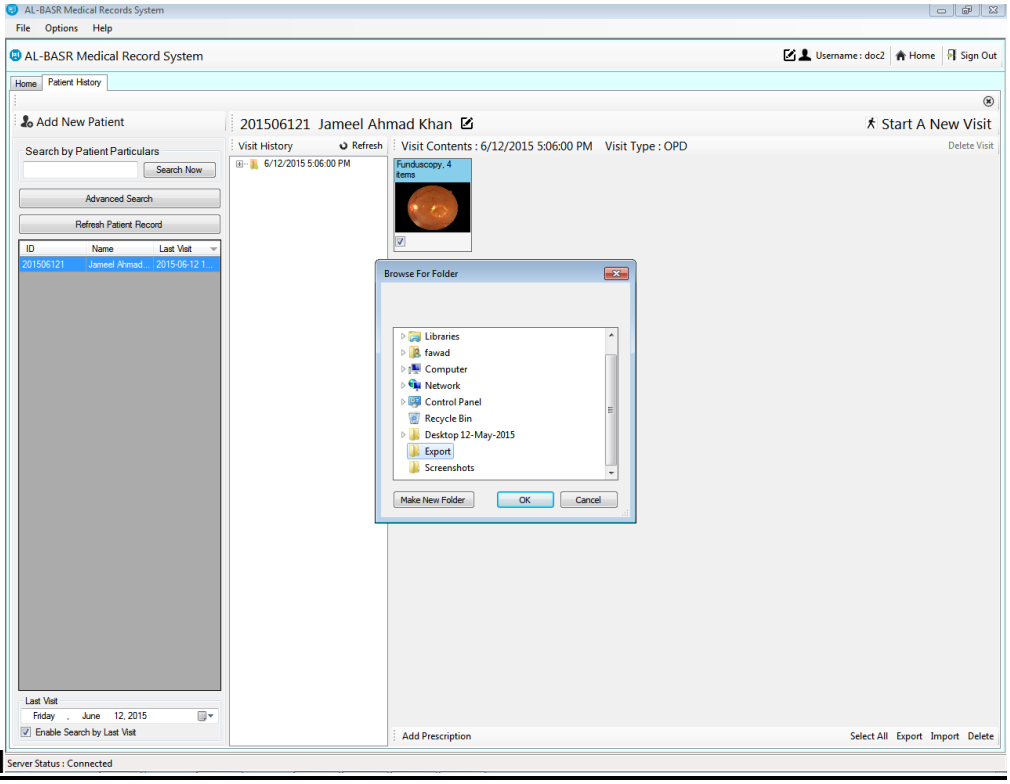
Retrieval of Jameel Ahmad Khan's Screening Record.



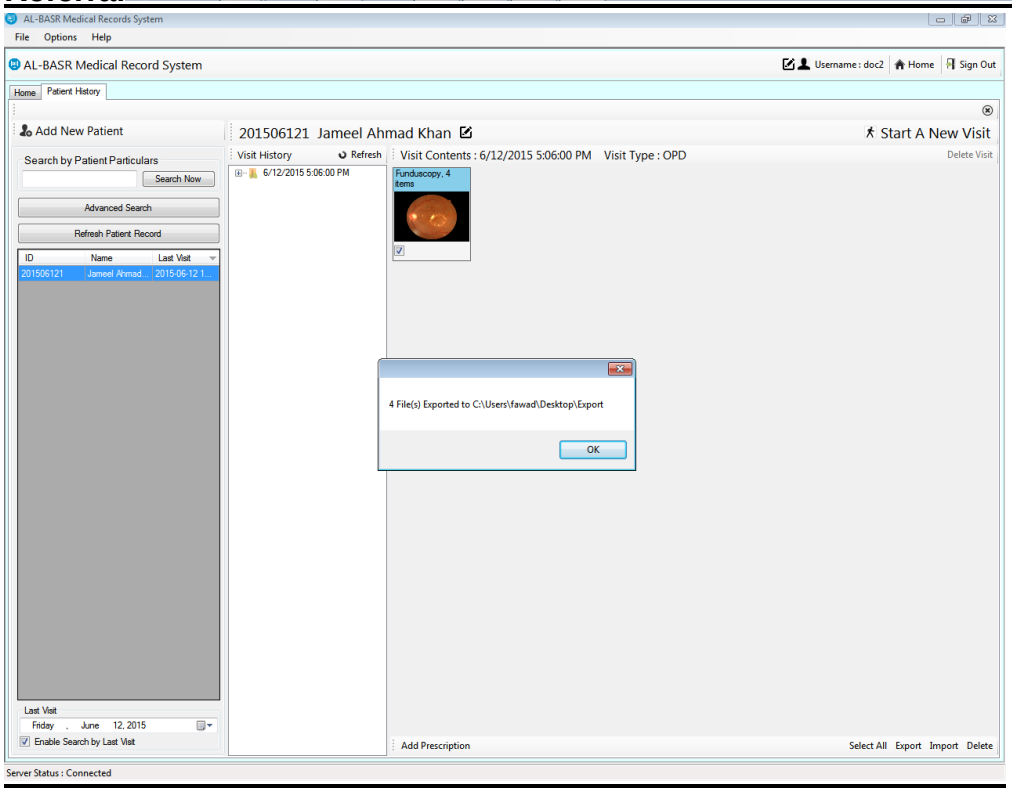


Referral of Jameel Ahmad Khan's Case to a Consultant at the Central Hospital

Exporting Records for

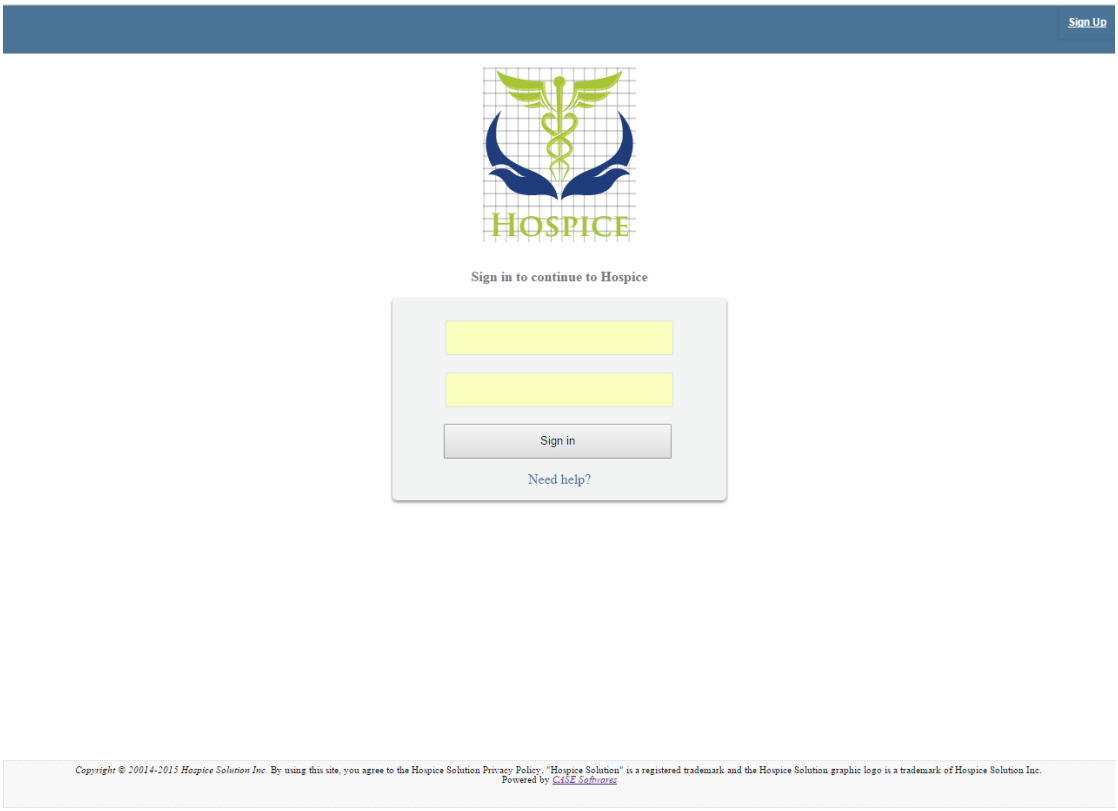


Referral



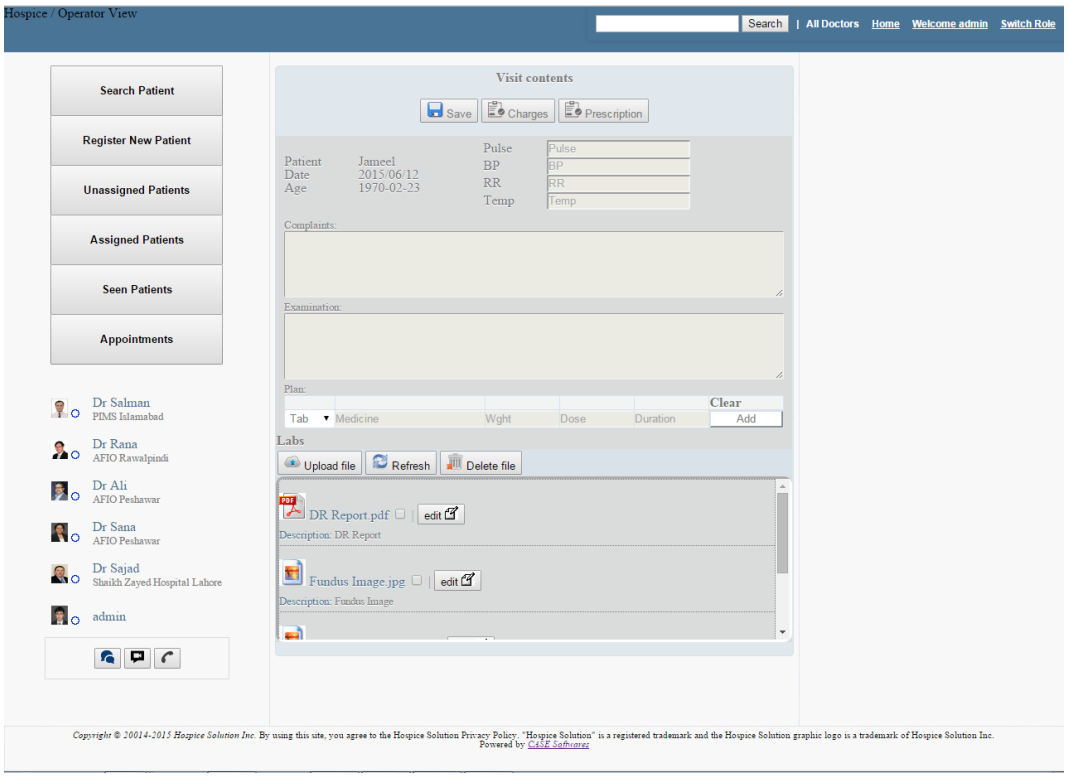
The Telemedicine System: Getting Medical Consultation from the Ophthalmologists at the Central Hospitals

An operator or a consultant at local hospital logs in to the Telemedicine System and attaches the medical record that needs to shared with the consulting consultant with the patient's case and dispatches it to the concerned consultant from the list of available consultants.



Uploading Patient's Medical Record on telemedicine system for consultation

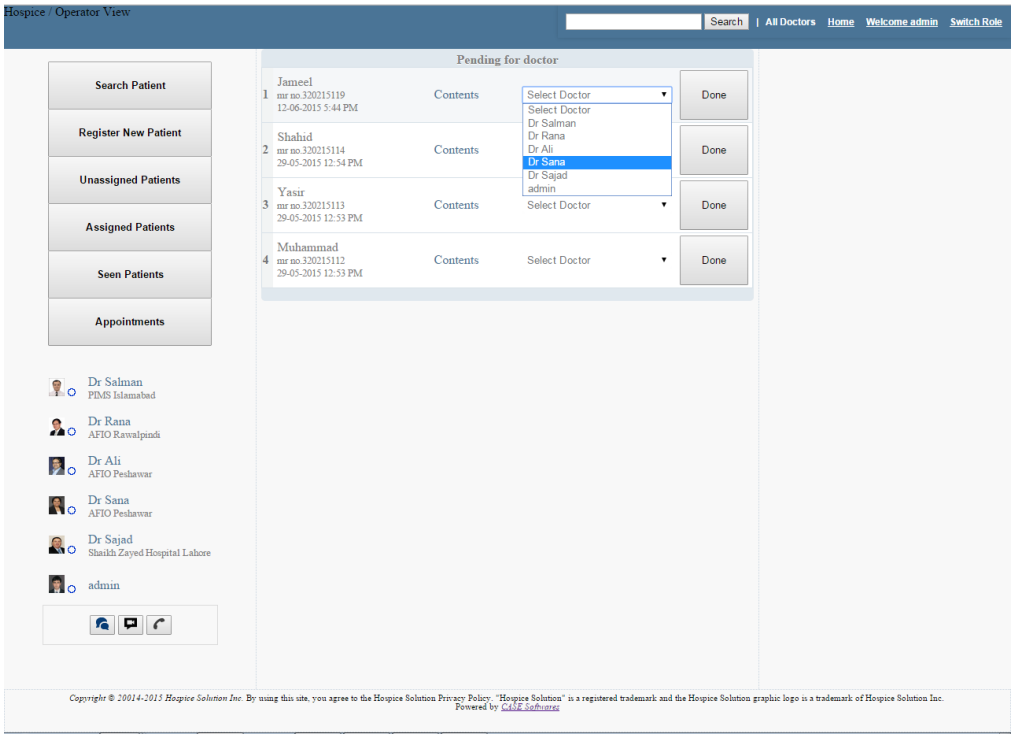
Patient: Jameel Ahmad Khan Records exported from AL-BASR MRS are attached with the patient's consultation.



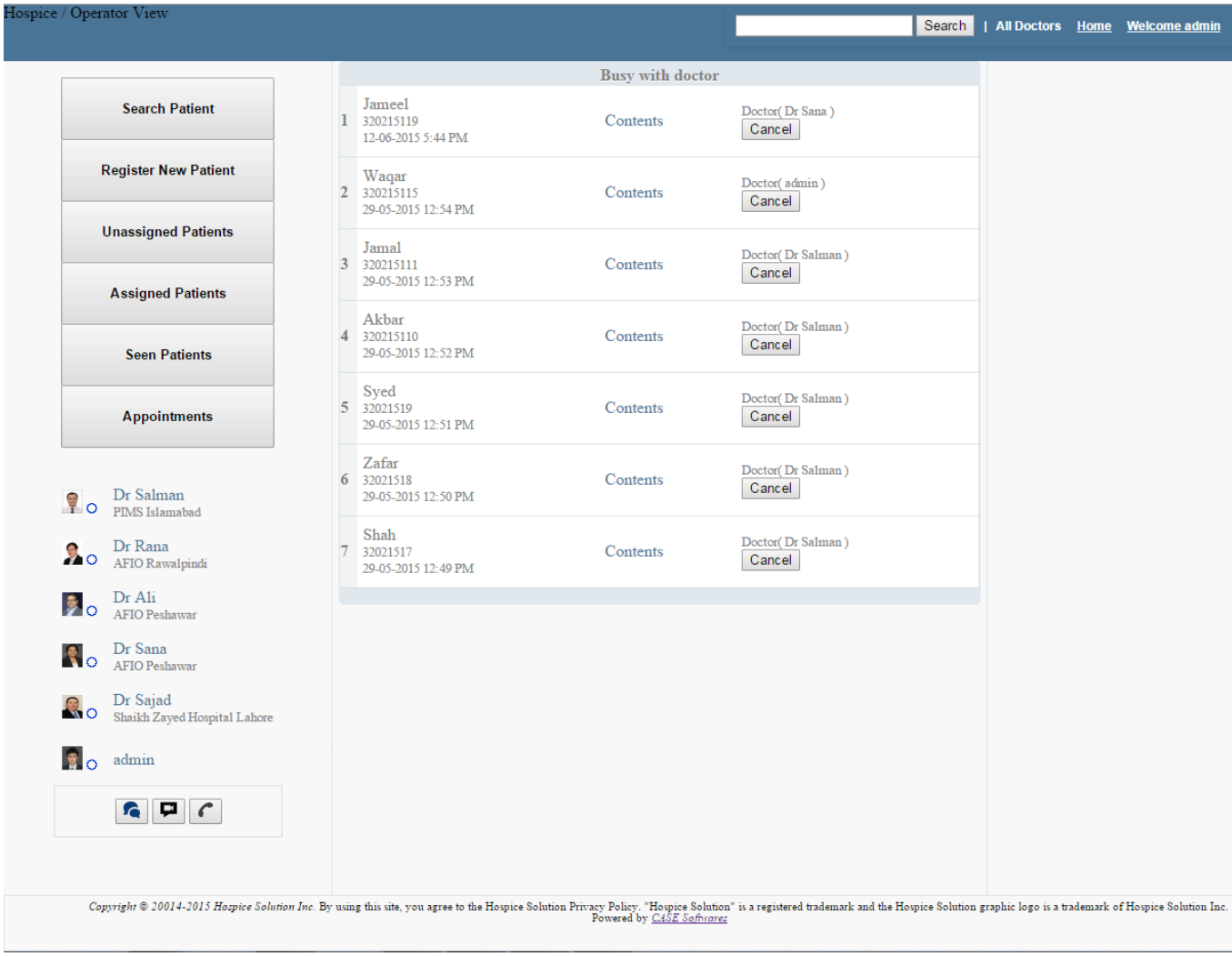
Selection of Consulting Ophthalmologist in the Telemedicine System

From the list of available consultants **Dr. Sana** is selected for the consultation.

From a List of available consultants, an operator can select any consultant for consultation based upon their area of speciality; the consultants in the telemedicine system may belong to many different hospitals that are subscribed to telemedicine system.



Patient: Jameel Ahmad Khan is now referred to **Dr. Sana** at the Central Hospital and is now appearing in the list of patients who have their **referrals busy with the assigned consultants.**

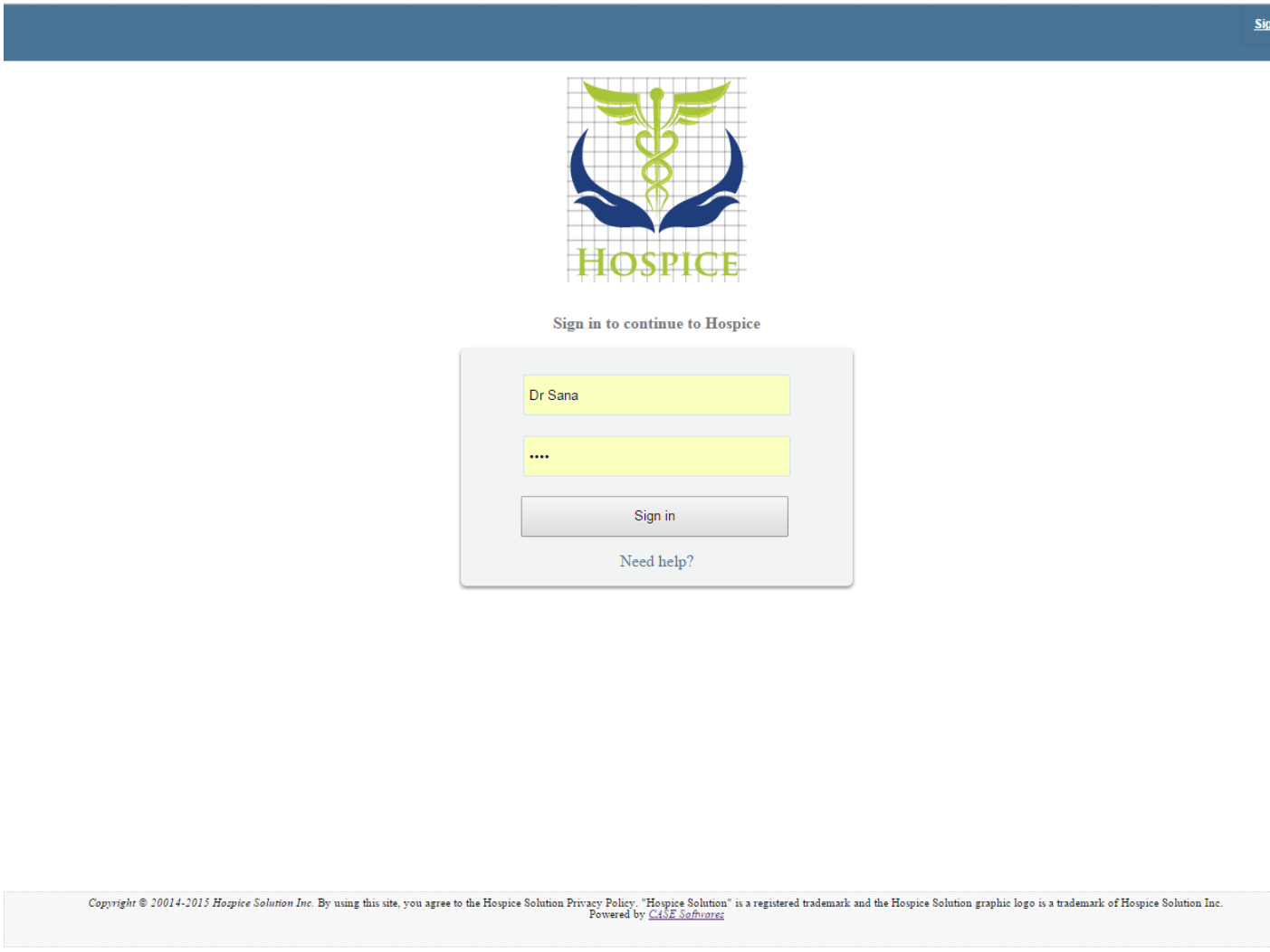


Consultation by Ophthalmologists at the Central Hospital

Consultants from hospitals across the globe can register themselves on the telemedicine system for providing consultation services.

A member consultant can log in to telemedicine system by entering the required credentials.

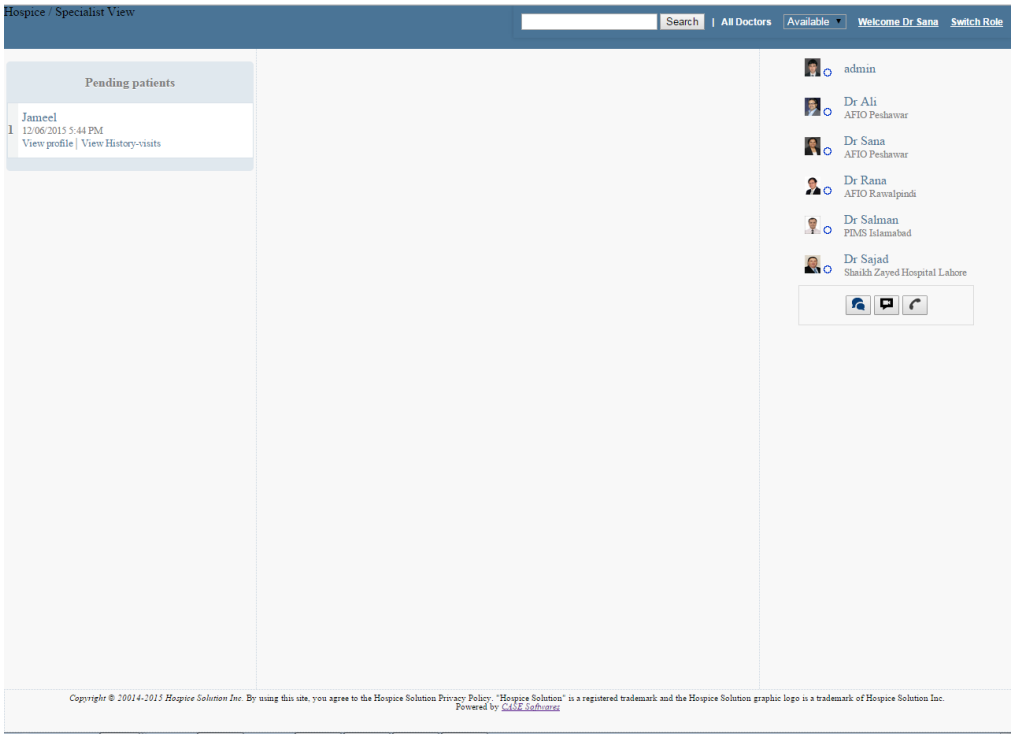
Dr. Sana (to whom Patient: Jameel Ahmad Khan was consulted to) logs in to telemedicine system to see if any consultations were requested of her.



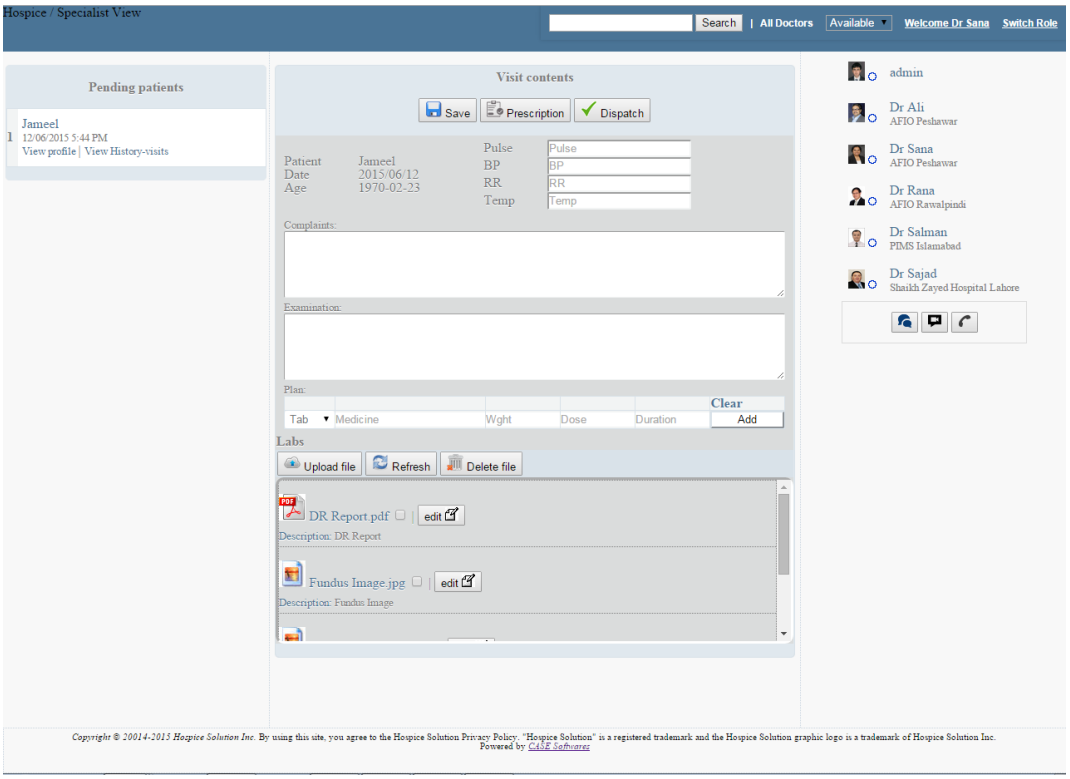
List of Pending Consultations

A list of pending consultations referred to a consultant is displayed at the left of the screen, so he/she can easily determine how many consultations are there to give.

Dr. Sana can see Patient: Jameel in her pending list.

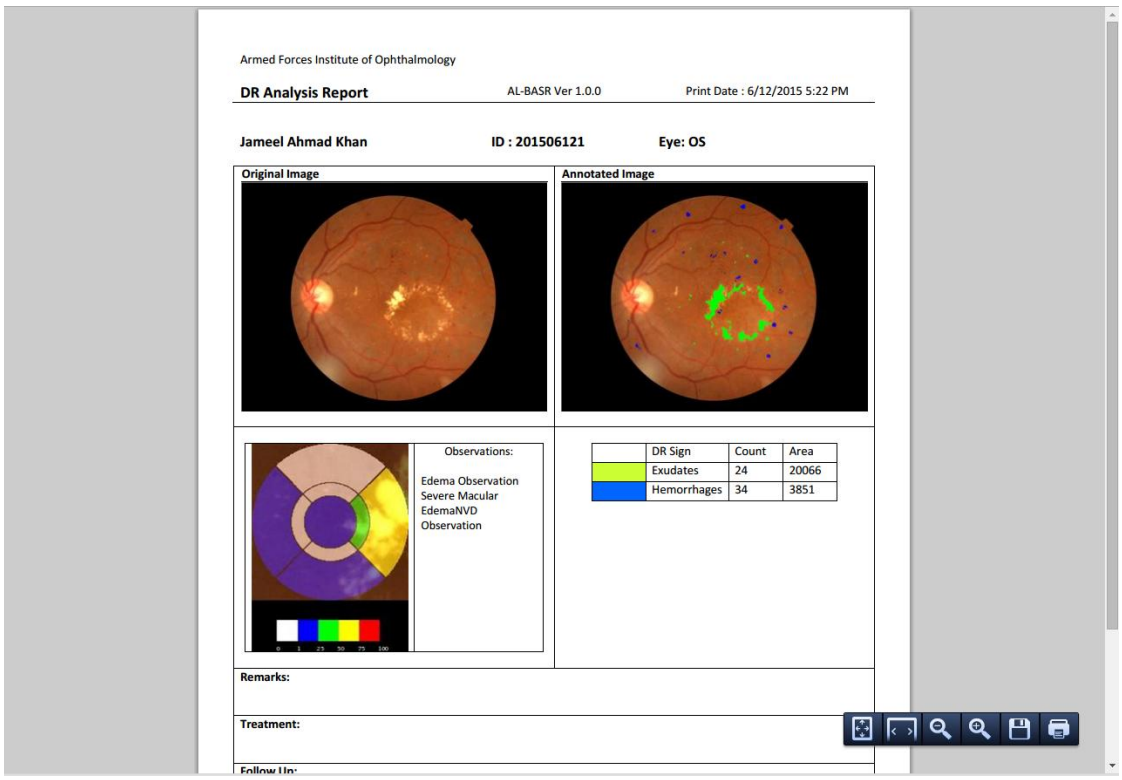


Patient's medical diagnosis record attached at the local hospital can be viewed by the consultant by clicking on the patient's name. The consultation form is opened having fields for **Complaints, Examination and Plan**, which a consultant fills to give the consultation.



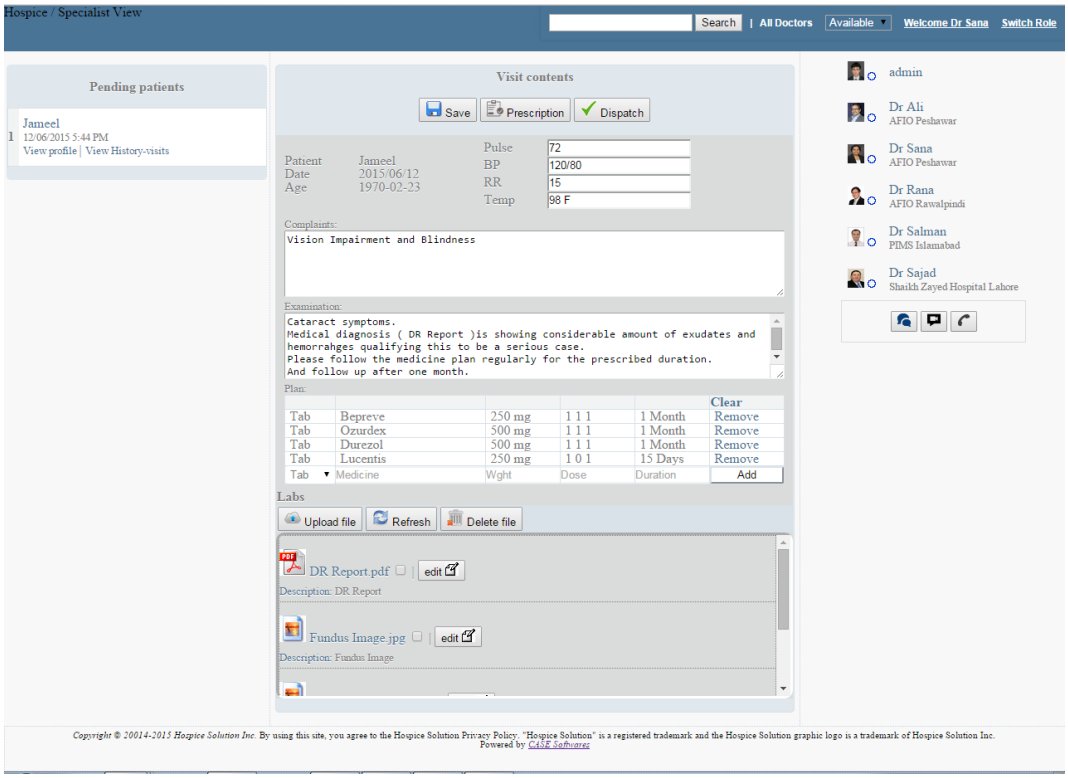
Examining patient's Medical Diagnosis Reports by a consultant.

Section of labs, at the bottom of the form contains the list of all files (images and reports etc) attached with consultation. A consultant can easily examine the contents by click opening them.

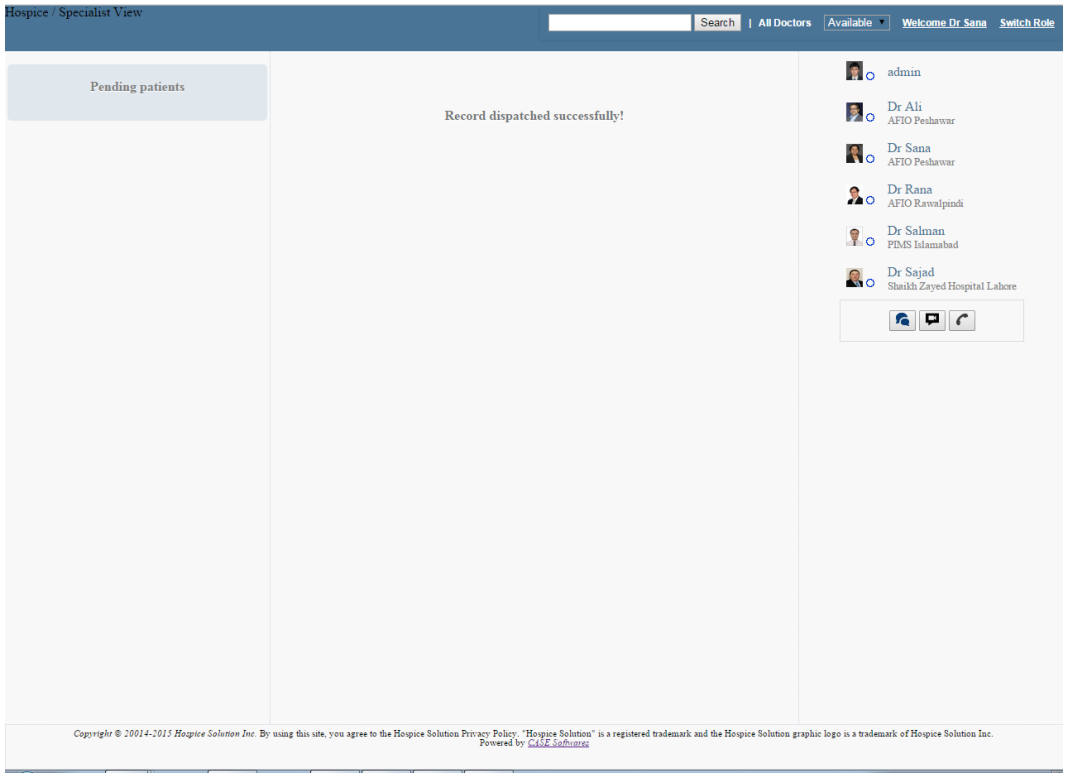


Completing a Consultation and dispatching it back.

After examining the diagnostic reports a consultant can complete the consultation by filling in the consultation fields i.e. writing the examination details and the plan of medicine prescribed, clicking on the **'Dispatch'** button dispatches the consultation back to the consulting authority (Local Hospital).

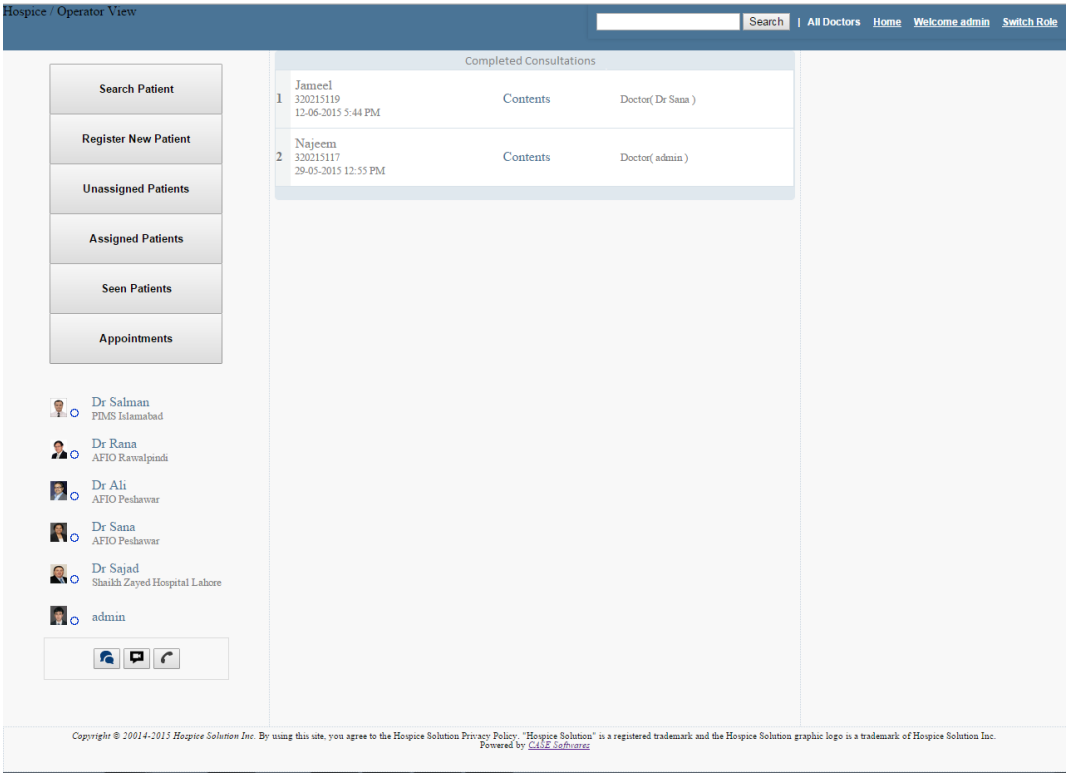


After the dispatch a success message is displayed and the patient is removed from the pending consultations list of that consultant.

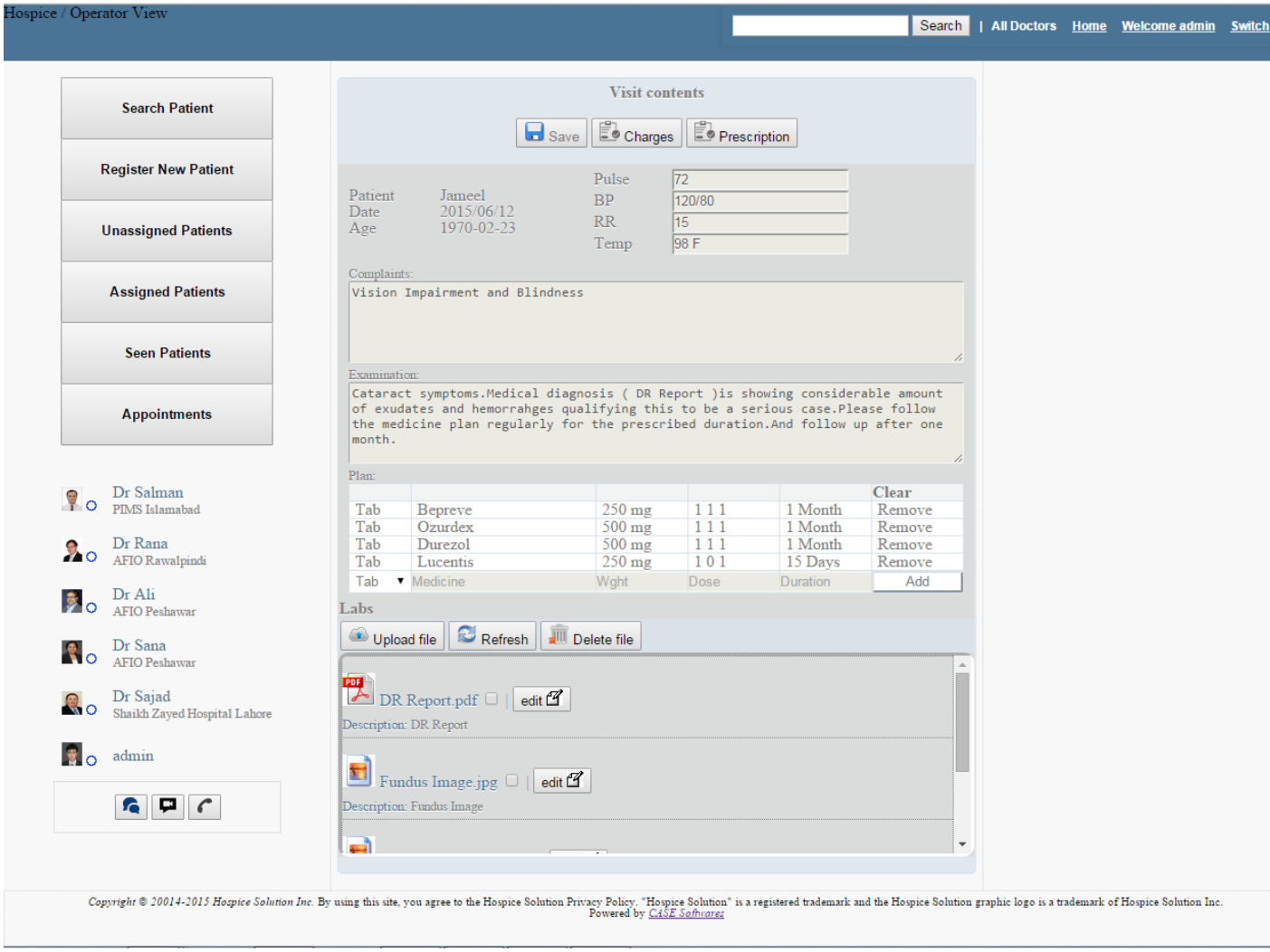


Receiving back the Consultation results at the Local Hospital (Consulting Terminal)

At the local hospital the operator who consulted the case to Dr. Sana can now see the Patient's Completed Consultation in **the Completed Consultations list.**



Clicking on the patient's name in the list opens up the consultation given by the consulting Ophthalmologist, and thereby completes the telemedicine exercise.


Hospice / Operator View
Search
All Doctors
Home
Welcome admin
Switch
Search Patient
Register New Patient
Unassigned Patients
Assigned Patients
Seen Patients
Appointments
Dr Salman
PIMS Islamabad
Dr Rana
AFIO Rawalpindi
Dr Ali
AFIO Peshawar
Dr Sana
AFIO Peshawar
Dr Sajad
Shaikh Zayed Hospital Lahore
admin
Visit contents
Save
Charges
Prescription
Patient Jameel
Date 2015/06/12
Age 1970-02-23
Pulse 72
BP 120/80
RR 15
Temp 98 F
Complaints:
Vision Impairment and Blindness
Examination:
Cataract symptoms.Medical diagnosis (DR Report)is showing considerable amount of exudates and hemorrahges qualifying this to be a serious case.Please follow the medicine plan regularly for the prescribed duration.And follow up after one month.
Plan:
Clear
Tab Bepreve 250 mg 1 1 1 1 Month Remove
Tab Ozurdex 500 mg 1 1 1 1 Month Remove
Tab Durezol 500 mg 1 1 1 1 Month Remove
Tab Lucentis 250 mg 1 0 1 15 Days Remove
Tab Medicine Wght Dose Duration Add
Labs
Upload file
Refresh
Delete file
DR Report.pdf edit
Description: DR Report
Fundus Image.jpg edit
Description: Fundus Image
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